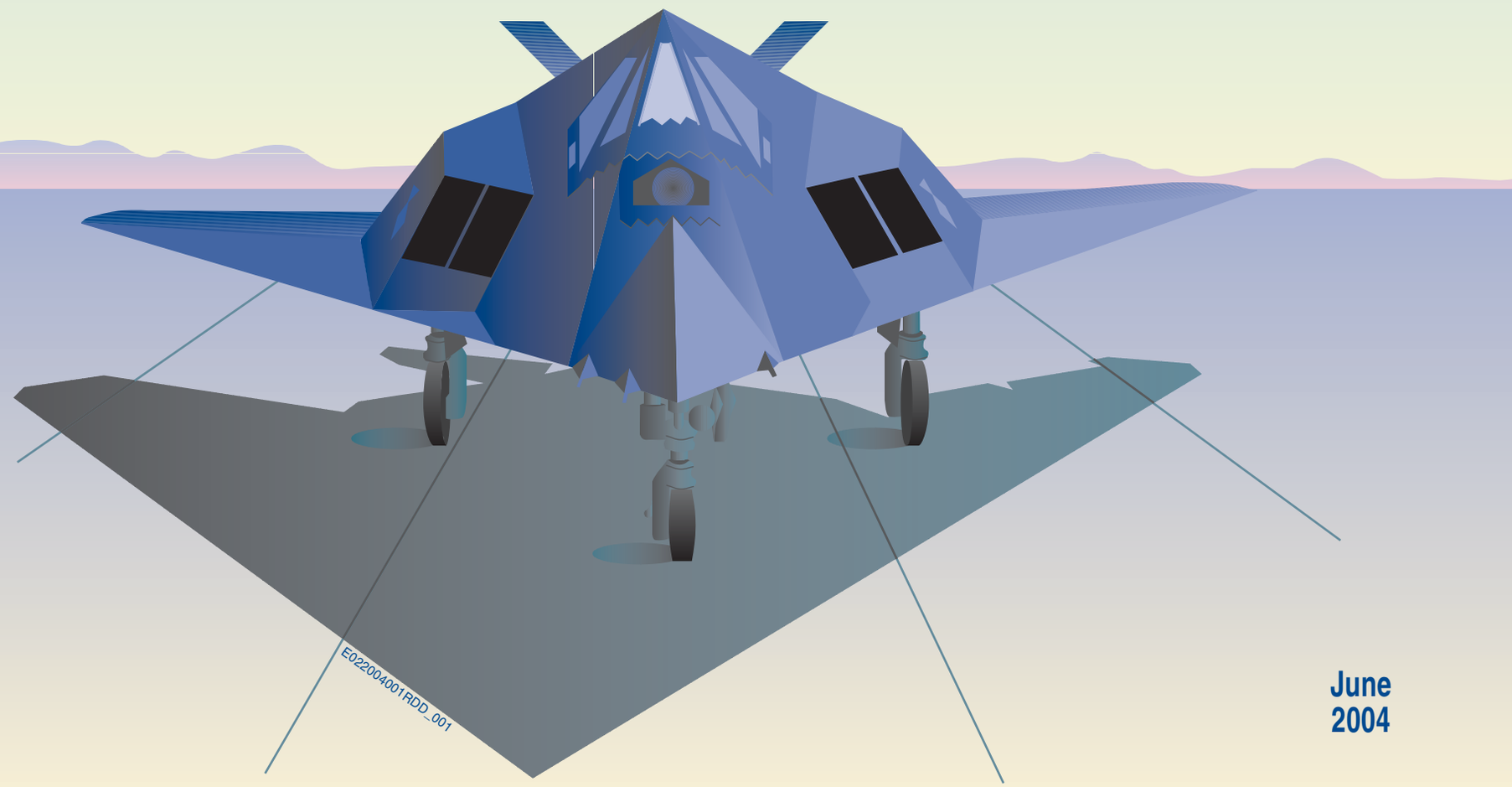
Final

Former McClellan Air Force Base

LRA Initial Parcel Record of Decision #1 (7 Sites)



June
2004

DEPARTMENT OF THE AIR FORCE
AIR FORCE REAL PROPERTY AGENCY

JUN 3 0 2004

MEMORANDUM FOR DISTRIBUTION LIST

FROM: AFRPA/DD-McClellan
3411 Olson Street
McClellan CA 95652-1003

SUBJECT: Submittal of the Local Redevelopment Authority (LRA) Initial Parcel Record of Decision #1 (7 Sites), Final Copy (DSR #511-5)

1. Attached is the final version of the LRA IP ROD #1 (7 Sites) (DSR #511-5). This is a primary document with a due date of 1 July 2004. Since this document has already undergone the agency review and signature process, no comments are required at this time. The Air Force wishes to thank each of the participating agencies for their support as the Air Force completes its first cleanup ROD at the former McClellan Air Force Base. This was a successful team effort for all involved in the process. The next step will be the preparation of the corresponding remedial action work plans and commencement of site cleanup in accordance with this ROD.

2. If there are any questions regarding this document, contact Steve Mayer, 643-0830 x 224.

PAUL G. BRUNNER
BRAC Environmental Coordinator

Attachment:
LRA Initial Parcel ROD #1 (7 Sites), Final Copy

LRA Initial Parcel Record of Decision #1 (7 Sites)
DISTRIBUTION LIST

Address	Number of Copies
AFRPA/DD-McClellan Attn: Mr. Steve Mayer Mr. Paul Bernheisel Community Relations Administrative Record 3411 Olson Street McClellan CA 95652-1003	 (5) + CD (1) (1) (2)
U.S. Environmental Protection Agency, Region IX Office of Superfund Programs Attn: Mr. Glenn Kistner (SFD-8-1) 75 Hawthorne Street (9th Floor) San Francisco CA 94105	 (3) + CD
Dept. of Toxic Substances Control Region 1, Site Mitigation Branch Attn: Mr. Kevin Depies 8800 Cal Center Drive Sacramento CA 95826	 (2) + CD
California Environmental Protection Agency Regional Water Quality Control Board Attn: Mr. James Taylor 11020 Sun Center Drive, #200 Rancho Cordova CA 95670-6114	(2)
County of Sacramento Office of McClellan Base Conversion Department of Economic Development Attn: Ms. Jeanette Musil 3331 Peacekeeper Way McClellan CA 95652	(1)
McClellan Park Attn: Mr. Alan Hersh 3140 Peacekeeper Way McClellan CA 95652	(1)

Final Report

LRA Initial Parcel Record of Decision #1 (7 Sites)

For Soil at PRL S-014, PRL S-033, PRL S-040, SA 003, SA 035, SA 041, SA 091

Former McClellan Air Force Base
Air Force Real Property Agency

McClellan, California

June 2004

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Acronyms and Abbreviations

µg/dL	micrograms per deciliter
µg/kg	micrograms per kilogram
AFRPA	Air Force Real Property Agency
ARARs	applicable or relevant and appropriate requirements
Base	former McClellan Air Force Base
bgs	below ground surface
bis2CEE	bis(2-chloroethyl)ether
CAMU	corrective action management unit
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal of Regulations
COC	contaminants of concern
DEPH	diethylphthalate
EM	Environmental Management
EPA	Environmental Protection Agency
ESD	Explanation of Significant Differences
FS	Feasibility Study
FSP	field sampling plan
HQ	hazard quotient
IAG	Interagency Agreement
IC	Investigation Cluster
IRP	Installation Restoration Program
IWL	industrial waste line
LRA	Local Redevelopment Authority
McClellan	former McClellan Air Force Base
mg/kg	milligram/kilogram
MTBE	methyl-tertbutylether

NCP	National Contingency Plan
NPL	National Priorities List
O&M	operation and maintenance
OU	Operable Unit
PAH	polynuclear aromatic hydrocarbons
PCB	polychlorinated biphenyls
PCE	perchloroethene (or tetrachloroethene)
POL	petroleum, oil and lubricant
ppbv	parts per billion by volume
PRL	Potential Release Location
RAB	Restoration Advisory Board
RAO	remedial action objection
RCRA	Resource Conservation and Recovery Act
RI	remedial investigation
RICS	Remedial Investigation Characterization Summary
ROD	Record of Decision
RWQCB	Regional Water Quality Control Board
SA	Study Area
SAP	sampling and analysis plan
SSG	shallow soil gas
SSPF	soils staging pile facility
SVOC	semi-volatile organic compound
TCE	trichloroethene or trichloroethylene
TPH-D	total petroleum hydrocarbons as diesel
TPH-G	total petroleum hydrocarbons as gasoline
UST	underground storage tank
VOC	volatile organic compound

SECTION 1

Declaration

1.0 Site Name and Location

This Record of Decision (ROD) is for seven sites at the former McClellan Air Force Base (McClellan or Base).

Department of the Air Force
Air Force Real Property Agency
Former McClellan Air Force Base
McClellan, CA 95652
CERCLIS Identification Number: CA4570024337

The seven sites are located in 3 of the 11 operable units (OU) that are used to facilitate site management at McClellan – OU A, OU B, and OU H. The sites are listed below with the OU and Investigation Cluster (IC) that each site is within, and Work Information Management System Identification:

- SA 003 (OU B, IC 3), SD 181
- SA 035 (OU A, IC 25), ST 198
- SA 041 (OU A, IC 26), SS 202
- SA 091 (OU A, IC 43), SS 243
- PRL S-014 (OU A, IC 26), SD 099
- PRL S-033 (OU B), SS 118
- PRL S-040 (OU H), SD 125

1.1 Statement of Basis and Purpose

This decision document presents the selected remedy for the seven sites located at McClellan in Sacramento, California. This ROD addresses only non-volatile organic compounds (non-VOC) in soil at seven sites within the Initial Parcel. The remedies in this ROD do not address VOC contamination in soil and groundwater that may be present at these sites. All seven sites will be evaluated in future RODs for soil and groundwater to determine if response actions are required for VOC contamination. Non-VOCs include semi-volatile organic compounds (SVOC), metals, and petroleum hydrocarbons. As defined for this ROD, SVOCs include polynuclear aromatic hydrocarbons (PAH), polychlorinated biphenyls (PCB), and pesticides. Petroleum hydrocarbons include two primary classes of compounds: total petroleum hydrocarbons as diesel (TPH-D) and as gasoline (TPH-G). Although most of the specific compounds that constitute TPH-G are volatile, TPH-G as a class of compounds is addressed in this ROD. This ROD does not address the specific compounds that constitute TPH-G (most significantly benzene, toluene, ethylbenzene, and xylenes) or non-VOC contamination in groundwater, nor does this ROD address radiological compounds.

If TPH contamination at a site is commingled with other contaminants regulated under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), then the TPH contamination is addressed in this ROD with the non-VOC contaminants. If commingling of TPH and CERCLA contaminants is not evident, then the remedy for that site is identified as No Action in this ROD and the TPH contamination is addressed under State requirements.

The Air Force and the U.S. Environmental Protection Agency (EPA) selected the soil remedial actions in accordance with the CERCLA as amended by the Superfund Amendments and Reauthorization Act of 1986 42 USC § 9601 *et seq.*, and with the National Oil and Hazardous Substances Pollution Contingency Plan, 40 Code of Federal Regulations (CFR) Part 300 (National Contingency Plan [NCP]). The Administrative Record contains the documents used in the selection of the soil remedial actions and is available for review at McClellan.

1.2 Assessment of the Sites

As a result of past industrial activities, releases of hazardous substances have contaminated soil at Study Area (SA) 003 and Potential Release Location (PRL) S-014. At SA 003, metals contamination is commingled with TPH contamination in soil; and at PRL S-014, PCB contamination is present in soil. Actual or threatened releases of hazardous substances from these sites presents a potential threat to public health, welfare, or the environment, if not addressed by implementing the response actions selected in this ROD.

At sites SA 035, PRL S-040, PRL S-033, SA 041, and SA 091, the Air Force has determined that for non-VOC contamination in soil, no action is necessary for the protection of human health and the environment.

1.3 Description of Selected Remedy

The seven sites are located in the Initial Parcel. The sites in the Initial Parcel were screened and grouped, and subsequently evaluated in the Local Redevelopment Authority (LRA) Initial Parcel Feasibility Study (FS) #1 to expeditiously move through the FS and ROD processes. The Initial Parcel has a high reuse potential and has been targeted for early transfer.

For SA 003 and PRL S-014, the cleanup strategy for non-VOCs in soil is to eliminate the contamination in soil to protect human health and the environment. The selected remedy for the soil contamination at PRL S-014 and SA 003 is Alternative 3A as described in the Initial Parcel FS #1. Under the selected remedy, the major components include the following:

- Contaminated soil will be excavated. The cleanup levels support unrestricted use of the property (e.g., concentrations in soil equivalent to a carcinogenic risk of 1×10^{-6} for each contaminant).
- At PRL S-014, approximately 290 cubic yards of contaminated soil will be removed. Approximately 2,600 cubic yards of contaminated soil will be removed from SA 003.
- Field screening and/or laboratory analysis may be used to guide excavation activities.

- EPA-certified lab analysis will be used for data gap resolution, confirmation sampling, and waste characterization purposes.
- Contaminated soil will be disposed offsite at a Class I or II landfill. Waste stream profile sampling of the excavated materials will be conducted to make the determination.
- The excavation void will be backfilled with clean soil.

The selected remedy provides the best approach for cost-effective risk reduction. It will provide protection to human health and the environment by physically removing contaminants from the site, thereby minimizing any residual risk.

In addition to SA 003 and PRL S-014, the Initial Parcel FS #1 evaluated remedial alternatives for two other sites, SA 035 and PRL S-040.

- Although evaluated for a remedial alternative in the FS, the isolated detections of the contaminants of concern (COC) identified at SA 035 are not likely to have significant impacts to human health and the environment. Furthermore, the Air Force performed additional characterization and limited excavation of the contaminated soil during December 2003, subsequent to completing the FS. COCs include a variety of chemicals, compounds, and elements present at concentrations that exceed screening criteria for potential impacts to human health and the environment. The Air Force has determined that no action is required for non-VOCs in soil.
- PRL S-040, also evaluated in the FS, is solely contaminated with fuel-related compounds. There is no CERCLA authority to address contamination that is solely fuel related, therefore No Action will be taken. However, the contamination will be remediated under state requirements. Because the TPH contamination at PRL S-040 is not commingled with CERCLA contaminants, details regarding the characterization of contaminants and risk at this site are provided in Appendix B rather than in the Decision Summary (Section 2) of this ROD.

The Air Force and EPA have also determined that no action is required for non-VOCs in soil at the remaining three sites included in this ROD because either a removal action has occurred to protect human health and the environment (PRL S-033) or no non-VOC COC are identified at the site (SA 041 and SA 091).

Additional sites descriptions and the remedial alternative discussions are presented in Sections 2.4, 2.6, and 2.7.

1.4 Statutory Determinations

1.4.1 PRL S-014 and SA 003

The selected remedy for non-VOCs in soil at PRL S-014 and SA 003 is protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to the remedial action, is cost effective, and utilizes permanent solutions, to the maximum extent practicable. The selected site remedy does not satisfy the statutory preference for treatment as a principal element of the remedy because costs to achieve the same risk reduction using treatment are significantly higher.

This remedy will not result in non-VOC hazardous substances, pollutants, or contaminants remaining onsite above levels that allow for unlimited use and unrestricted exposure. Therefore, a five-year review will not be required for this remedial action. However, if the remedial action has not been implemented, the next five-year review would include a review of these sites. Specifically, the Technical Assessment for each site would ascertain what actions are still required and whether the remedy is protective of human health and the environment. In the event the remedial action cannot achieve the ROD remedial action objections (RAO), an amendment to the ROD or a ROD Explanation of Significant Differences (ESD) would be performed to resolve the discrepancy.

1.4.2 SA 035, SA 041 and SA 091

The Air Force and EPA have determined that no action is required for non-VOCs in soil at SA 035, SA 041, and SA 091 to protect human health and the environment.

1.4.3 PRL S-033

The Air Force and EPA have determined that no action is required for non-VOCs in soil at PRL S-033 because a removal action has occurred to protect human health and the environment. Non-VOC hazardous substances, pollutants, or contaminants are not remaining onsite above levels that allow for unlimited use and unrestricted exposure. Therefore, a five-year review will not be required at PRL S-033 based on the previous removal action.

1.4.4 PRL S-040

The Air Force and EPA have determined that no action is required under CERCLA for non-VOCs in soil at PRL S-040 because PRL S-040 is solely contaminated with fuel-related compounds. Sites contaminated with fuel-related compounds are excluded from CERCLA requirements. Therefore, the Air Force will remediate the fuel-related contaminants under State requirements. Because the TPH contamination at PRL S-040 is not commingled with CERCLA contaminants, details regarding the characterization of contaminants and risk at this site are provided in Appendix B rather than in the Decision Summary (Section 2) of this ROD. With the exception of Appendix B, PRL S-040 is not discussed further in this ROD.

1.5 Data Certification Checklist

The following information is included in "Section 2 – The Decision Summary" of this ROD. Additional information can be found in the Administrative Record file for the Base.

- Chemicals of concern and their respective concentrations [Section 2.4]
- Baseline risk represented by the chemicals of concern [Section 2.4 and Appendix A]
- Current and reasonably anticipated future land use assumptions and current and potential future beneficial uses of groundwater used in the baseline risk assessment and ROD [Section 2.4]
- Cleanup levels established for chemicals of concern and the basis for these levels [Table 2-6]
- How source materials constituting principal threats are addressed [Section 2.8]

- Key factor(s) that led to selecting the remedies [Section 2.91]
- Estimated capital; annual operation and maintenance (O&M); and total present worth costs, discount rate, and the number of years over which the remedy cost estimates are projected [Section 2.9.3]
- Potential land use that will be available at the sites as a result of the selected remedies [Section 2.9.4]

1.6 Authorizing Signatures

The USEPA and the Air Force concur and accept the selected remedy and or remedies as described in this ROD:

United States Air Force

Albert F. Lowas, Jr. — May 27, 2004 — Date
Director, Air Force Real Property Agency
USAir Force

United States Environmental Protection Agency

Kathleen H. Johnson — June 24, 2004 — Date
Chief, Federal Facility and Site Cleanup Branch
EPA, Region 9

State of California

The State of California, Department of Toxic Substances Control (DTSC) and the Central Valley Regional Water Quality Board (RWQCB) had an opportunity to review and comment on the Initial Parcel #1 ROD and our concerns were addressed, with one condition. Considering past uses and existing sampling and analysis, DTSC has the continuing concern that while site PRL S-014 is suitable for industrial/commercial use, the site may not be suitable for unrestricted use. If unrestricted use is proposed for this parcel, DTSC will work with the future owner/user to obtain the additional data to assure safe reuse.

Anthony J. Landis, P.E. — June 29, 2004 — Date
Chief, Northern California Operations
Office of Military Facilities
Department of Toxic Substances Control, California EPA

SECTION 2

The Decision Summary

2.0 Site Name, Location, and Description

McClellan is located in Sacramento County, 7 miles northeast of downtown Sacramento, California (CERCLIS Identification Number CA4570024337). It comprises approximately 3,000 acres and is bounded by the city of Sacramento on the west and southwest, the unincorporated areas of Antelope on the north, Rio Linda on the northwest, and North Highlands on the east. A location map is shown on Figure 2-1. This ROD focuses on seven sites within the Initial Parcel, a portion of the Base with high re-use potential. The locations of the seven sites within the Initial Parcel are shown on Figure 2-2. The Initial Parcel is comprised of 526 acres with the seven sites consisting of 22 acres. Because the TPH contamination at PRL S-040 is not commingled with CERCLA contaminants, details regarding the characterization of contaminants and risk at this site are provided in Appendix B rather than in the Decision Summary (Section 2) of this ROD. PRL S-040 is not discussed further in this ROD.

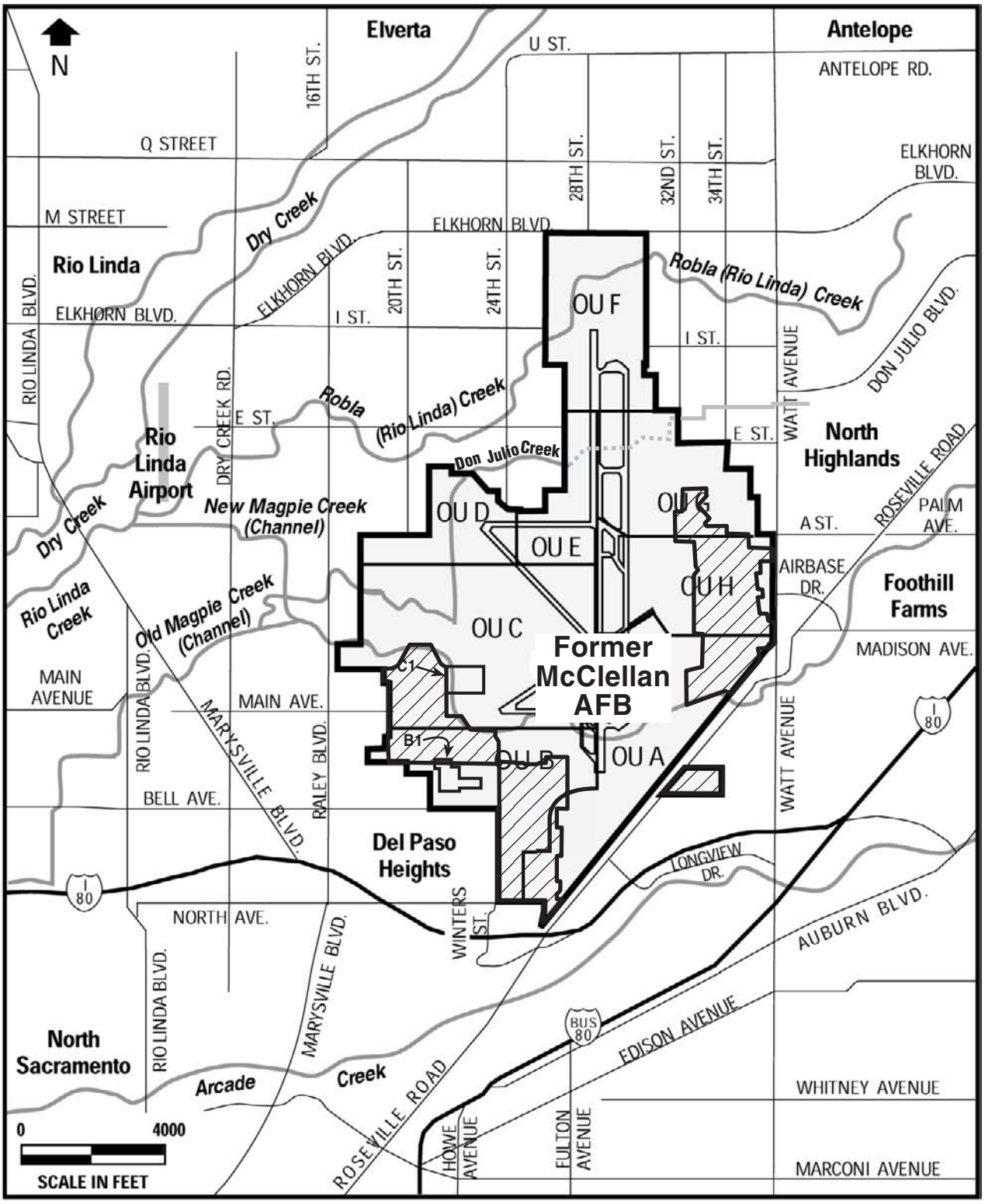
The predominant current land uses at McClellan are industrial, aviation, and residential. Open areas also present are not currently used for any of these purposes. Most of the land surrounding McClellan is zoned for low-density residential and agricultural use. Land parcels designated for commercial, office, and industrial use are interspersed around the Base and are used for shopping centers, office complexes, and warehouses.

In the past, most of the industrial facilities were located in the southeastern part of the Base. The southwestern part has both industrial and storage areas. The far western part of the Base has environmentally sensitive vernal pools and wetlands. Between these wetlands and the taxiways, an open area occurs that was used historically for industrial waste disposal pits, and a series of engine test cells is located there. Aircraft parking areas and washracks are located in the northeastern area of the Base. Current and proposed land uses at McClellan do not differ significantly from those used while McClellan was an active military installation. Four of the six (CERCLA contaminated) sites addressed in this ROD are located on the eastern side of the Base, while two of the sites are located in the southern and western parts of the Base. The use of the facilities at the sites included both industrial operations and storage areas. Further site characteristics are is presented in Section 2.4 of this ROD.

2.1 Site History and Enforcement Activities

2.1.1 Site History

McClellan was an active industrial facility almost since its dedication in 1936, when it was called the Sacramento Air Depot. Operations changed from the maintenance of bombers during World War II and the Korean conflict to the maintenance of jet aircraft in the 1960s.



Works Consulted: Final McClellan AFB PEIS/EIR, July 1997; California State Automobile Association, Greater Sacramento, Northern Area, copyright 1993; Thomas Brothers Maps, The Thomas Guide, 1994 Sacramento County, copyright 1994.

LEGEND

INITIAL PARCEL

FIGURE 2-1
LOCATION OF FORMER McCLELLAN AIR FORCE BASE
LRA INITIAL PARCEL RECORD OF DECISION #1
FORMER McCLELLAN AIR FORCE BASE
SACRAMENTO, CALIFORNIA

E062003004RDD_988 (1/23/04)

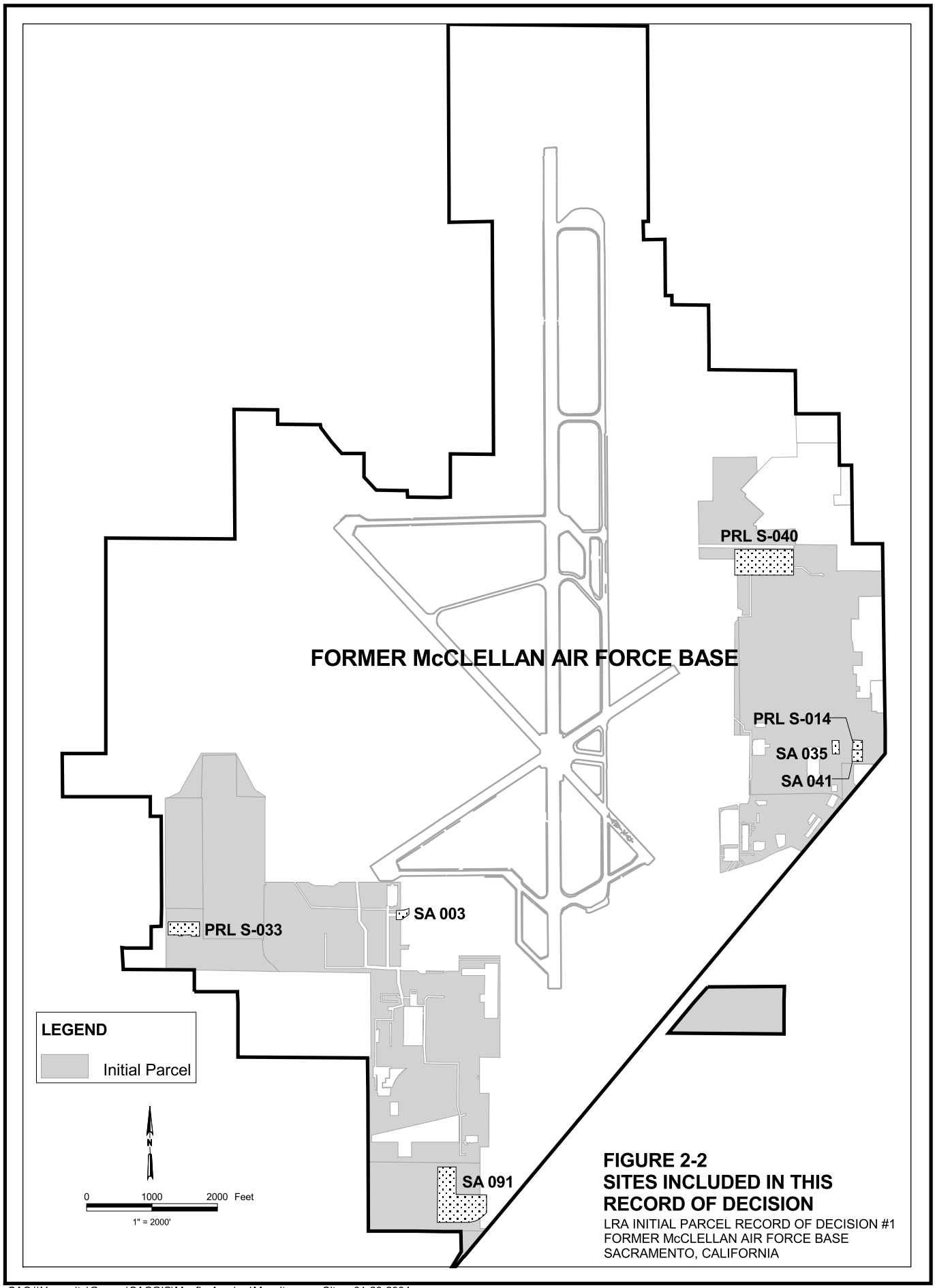


FIGURE 2-2
SITES INCLUDED IN THIS RECORD OF DECISION
LRA INITIAL PARCEL RECORD OF DECISION #1
FORMER McCLELLAN AIR FORCE BASE
SACRAMENTO, CALIFORNIA

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More recently, operations were expanded to include the maintenance and repair of communications equipment and electronics. A summary of the history of Base operations is provided in Table 2-1. On July 22 1987, McClellan was officially added to the National Priorities List (NPL) by the EPA. In 1995, the Congressional Base Realignment and Closure Committee recommended closure of McClellan; and on July 13, 2001, McClellan was closed as an active military facility.

TABLE 2-1
History of Base Operations
Former McClellan Air Force Base Initial Parcel Record of Decision Group 1

Period	Types of Operations	Hazardous Material Facilities/Activities
Pre-1936	Farm and rangeland	None
1936-1939	Base construction	Demolition and construction
1939-1946	Aircraft maintenance, modification, and repair	Disposal pits, aircraft storage, aircraft maintenance and repair, aircraft painting, hangars, machine shops, washracks, waste-water treatment, fuel/oil storage, open storage, firing range, ammunition storage
1946-1956	Aircraft maintenance, modification, repair, disassembly, and shipment	Disposal pits, aircraft storage, aircraft maintenance and repair, aircraft painting, hangars, machine shops, washracks, waste-water treatment, open storage, fuel/oil storage, electronics testing and repair, firing range, ammunition storage
1956-1964	Aircraft maintenance, modification, repair, disassembly, and shipment	Disposal pits, aircraft storage, aircraft maintenance and repair, aircraft painting hangars, machine shops, washracks, waste-water treatment, open storage, fuel/oil storage, electronics testing and repair, firing range, ammunition storage
1964-1974	Aircraft maintenance, modification, and repair	Disposal pits, aircraft storage, aircraft maintenance and repair, hangars, machine shops, washracks, wastewater treatment, open storage, fuel/oil storage, electronics testing and repair, generator dismantling, aircraft painting, firing range, ammunition storage
1974-1982	Aircraft maintenance, modification, and repair; electronics maintenance and repair	Disposal pits, aircraft storage, aircraft maintenance and repair, hangars, machine shops, washracks, wastewater treatment, open storage, fuel/oil storage, electronics testing and repair, generator dismantling, aircraft painting, firing range, ammunition storage
1982-2001	Aircraft maintenance, modification, and repair; electronics maintenance and repair	Aircraft storage, aircraft maintenance and repair, hangars, machine shops, washracks, wastewater treatment, open storage, fuel/oil storage, electronics testing and repair, generator dismantling, aircraft painting, firing range, ammunition storage, fire training
22 July 1987	McClellan added to NPL	None
1995	Base Realignment and Closure recommends Base closure	None
2001	Base closure	None

Source: Base Realignment and Closure Cleanup Plan (CH2M HILL, 1997).

Historical operations conducted at McClellan released contaminants that also impacted the soil and groundwater. A brief summary of the historical operations at the six (CERCLA contaminated) Initial Parcel sites is provided in this section. More detailed information regarding the past operations at each site is included in Section 2.4.

- **PRL S-014** is the former location of a motor-pool facility (Building 22). An electrical transformer is located north of the building, and storage of electrical ballasts was

observed during a site inspection. The site included former underground storage tanks (UST), a washrack, and a hazardous waste storage area. The site is unoccupied except for the use of a small storage shed (Building. 17) by a tenant located in Building. 54, immediately south of the site. None of the areas adjacent to this site are used for residences or facilities that service sensitive populations (such as day-cares, schools, or hospitals.

- **SA 003** consists of an uncovered vehicle washrack and a former waste storage area. The site is vacant, awaiting use by some potential future tenant through a lease arrangement with McClellan Park. None of the areas adjacent to this site are used for residential or other sensitive uses.
- **SA 035** is the former location of a quartermaster's warehouse (Building 20) and an adjacent parking lot. The site includes a former diesel UST. The site is occupied at this time by a lease tenant (Surewest Communications). None of the areas adjacent to this site are used for residential or other "sensitive" uses.
- **PRL S-033** is the former location of a chemical storage and chemical waste storage facility located in Building 786A. The site is occupied by a lease tenant (Beutler Heating and Air Conditioning). None of the areas adjacent to this site are used for residential or other sensitive uses.
- **SA 041** is the former location of a welding and sheet-metal fabrication shop and carpentry shop (Building 54). The site is occupied at this time by a lease tenant (Risse Mechanical). None of the areas adjacent to this site are used for residential or other sensitive uses.
- **SA 091** consisted of a former warehouse (Building 621) and open storage area. Bay A in the building was a designated hazardous materials storage area. The building and foundation have been removed. The site is vacant, awaiting redevelopment by some future tenant through a lease arrangement with McClellan Park. None of the areas adjacent to this site are used for residential or other sensitive uses.

2.1.2 Previous Investigations

In response to detections of contamination, McClellan initiated the first phase of the Installation Restoration Program (IRP) in 1981. Under the IRP, the investigation and remediation of contamination at the Base has been conducted in accordance with CERCLA as amended by Superfund Amendments and Reauthorization Act. The principal data collection and data analysis component of the restoration program is the remedial investigation (RI) at the Base. The RI is the primary source of site characterization data for the six (CERCLA contaminated) Initial Parcel sites.

Several phases of investigation have been conducted at each site. Generally, the media collected during the sampling events included soil, soil gas, and groundwater. The following investigations have been conducted for the sites. Detailed references are provided in Section 2.4 prior to the summary of the contaminant characterization for each site.

- PRL S-014
  - Preliminary Site Assessment in 1991 (OU A Preliminary Assessment, Radian, 1991).

  - Phases 1 and 2 RIs, and a Data Gap 3 Investigation from 1992 through 2000. Soil, soil gas, and groundwater were sampled (OU A Remedial Investigation Characterization Summary [RICS], Jacobs, 2001).
  - Site Closure Data Gap Investigation in 2001 (OU A RICS Addendum, Jacobs, 2002).
  - Initial Parcel FS Data Gaps Investigation in 2002 (Appendix E, Initial Parcel FS #1, CH2M HILL, 2003).

- PRL S-033
  - Preliminary Site Assessment in 1991 (OU B Preliminary Assessment, Radian, 1991).
  - Soil Gas Investigation in 1991 (OU B RICS, Radian, 1995).
  - RI in 1992 – 1993 (OU B RICS, Radian, 1995).
  - Data Gaps Investigation in 1998 (OU B RICS Addendum, URS, 2004).
  - PAH Removal Action in 2001 (Weston and Kleinfelder, 2002).

- SA 003
  - Site investigation for leaks in the industrial waste line (IWL) in 1988 (OU B RICS, Radian, 1995).
  - Preliminary Site Assessment in 1991 (OU B Preliminary Assessment, Radian, 1991).
  - Soil Gas Investigation at IC 3 in 1991 (OU B Soil Gas Data Summary, Radian, 1991).
  - Soil Investigation at Magpie Creek in 1993 (OU B RICS Addendum, URS, 2004).
  - RI in 1995 (OU B RICS, Radian, 1995).
  - RI Data Gaps Investigation (OU B RICS Addendum, URS, 2004).
  - Petroleum, Oil, and Lubricant/Shallow Soil Gas (POL/SSG) Phase 1 Investigation in 2002 (Working Copy, OU B Phase 1 POL/SSG RICS Addenda for Selected Sites, Volumes 1 and 2).
  - Site Investigation in 2003 (AFRPA, 2003, provided in Initial Parcel FS #1 Appendix H).

- SA 035
  - Preliminary Site Assessment in 1991 (OU A Preliminary Assessment, Radian, 1991).
  - Soil sample collection during UST removal in 1992 (OU A RICS, Jacobs, 2001).
  - Phase 2 RI and Data Gap 3 Investigations during 1996-1999 (OU A RICS, Jacobs, 2001).
  - Site Closure Data Gaps Investigation 2000-2001 (OU A RICS Addendum, Jacobs, 2002).
  - Additional characterization and limited excavation during December 2003 (AFRPA, Initial Parcel FS #1 Addendum, April 2004)

- Initial Parcel FS Data Gaps Investigation in 2002 (Appendix E, Initial Parcel FS #1, CH2M HILL, 2003).
  - SA 041
  - Site Survey in 1991 (OU A Preliminary Assessment, Radian, 1991).
  - RI in 1992 (OU A RICS, Jacobs, 2001).
- SA 091
  - Soil sample collection due to solvent spill in 1988 (OU A RICS, Jacobs, 2001).
  - Preliminary Site Assessment in 1991 (OU A Preliminary Assessment, Radian, 1991).
  - Site Inspection in 1992 (OU A RICS, Jacobs, 2001).
  - Phase 1 and 2 RI during 1992-2001 (OU A RICS, Jacobs, 2001).
  - Initial Parcel FS Data Gaps Investigation in 2002 (Appendix E, Initial Parcel FS #1, CH2M HILL, 2003).

2.1.3 Enforcement Activities

On October 15, 1984, EPA proposed listing McClellan as a candidate site for inclusion on the NPL. McClellan was formally placed on the NPL on July 22, 1987. In 1989, the Air Force, EPA Region 9, and the California Department of Health Services signed an Interagency Agreement (IAG) for the cleanup. The IAG was signed pursuant to CERCLA, the Resource Conservation and Recovery Act of 1976 (RCRA), the National Environmental Policy Act, the Defense Environmental Restoration Program, Executive Order 12580, and the California Health and Safety Code. The IAG was implemented in 1990.

Under the IAG, the Air Force agreed to undertake, seek adequate funding for, fully implement, and report on RIs, FSs, all response actions, and O&M of response actions. The IAG stipulated that the Air Force be designated lead agency for the cleanup of contamination. Support agencies include EPA Region 9, and for the State of California, the Department of Health Services (now the DTSC and RWQCB). The EPA has final authority in selecting remedies at federal facilities on the NPL, like McClellan. To date, the Air Force has provided the funding for environmental activities at McClellan and is expected to provide the funding for the remedial actions identified in this ROD.

2.2 Community Participation

McClellan has had an active community relations/public participation program since the beginning of restoration activities in the early 1980s. The purpose of the program is to help community members understand McClellan's cleanup program and learn how to become involved in the cleanup decision-making process.

Highlights of the community relations activities under taken by McClellan are presented below:

- **Restoration Advisory Board (RAB).** In 1995, a RAB was formed to increase communication between the Air Force and the neighboring community. Through open communication and the exchange of ideas, interests, and concerns, the RAB supports the search for safe, timely, and effective cleanup solutions so that McClellan may ultimately

be approved for transfer from Air Force ownership to public/private ownership. The RAB meetings are held quarterly. These public meetings include discussions of the RAB's advice on particular issues, information on cleanup actions or public interest items, and updates on the status of the cleanup program. The Air Force provides seminars to RAB members to aid in their review of documents and cleanup actions. In addition, the Technical Assistance for Public Participation program is available to provide funds to retain an independent contractor to assist the community members in their reviews.

- **Administrative Record.** McClellan established the Administrative Record at the beginning of its environmental investigation to store all information that supports cleanup decisions at McClellan. An Information Repository was set up to make all of the information, reports, and reference materials available for public review. More than 15 years of documentation is available for review by the public. The location of this repository is within the AFRPA office, 3411 Olson St. McClellan, CA 95652. Documents related to the cleanup efforts at McClellan also are available for review at the DTSC, RWQCB, and EPA Region 9 offices.

- **Community Relations Plan.** The first McClellan Community Relations Plan was approved in August 1985. The Community Relations Plan was revised in 1988, 1991, 1993, 1996, 1999, and 2002.

- **Mailing List.** A mailing list of all interested parties in the community is maintained by the Air Force and updated regularly. In 2002, blanket mailings to all residents in the vicinity of McClellan were conducted in an effort to add new/interested parties to the mailing list.

- **Newsletters.** Since May 1984, McClellan's quarterly newsletter, the *Environmental Action Update*, has been distributed to interested individuals and organizations. The newsletter includes articles on the status of the IRP, meeting announcements, listings of recently issued documents, and names of individuals to contact for more information. The newsletter is mailed to more than 2,500 neighbors of the Base, community leaders, businesses, environmental organizations, civic clubs, and the media.

- **Website.** In October 1997, McClellan established a web site to support communication about its environmental program (http://www.afrpa.hq.af.mil/mcclellan/HTML/index.html). Information available on the web site includes:

  – A search feature identifying the documents stored in the Administrative Record
  – A schedule of when new documents will be released
  – Announcements for upcoming public meetings and document comment periods
  – RAB information and meeting minutes
  – Copies of newsletters and fact sheets
  – Mailing list sign up
  – Initial Parcel FS #1
  – Initial Parcel Proposed Plan #1

- **Fact Sheets.** Since May 1990, the Air Force publishes fact sheets to help explain specific topics. Topics have included descriptions of new cleanup technologies, cleanup milestones, and descriptions of removal action plans. Fact sheets are also provided to increase the community's knowledge of technologies or the science of cleanup at McClellan.
- **Public Comment Periods/Public Meetings.** Public comment periods give the community an opportunity to review documents and provide comments verbally or in writing. Public meetings are held to solicit public comment on documents or actions and to address areas of public concern or interest. A public comment period on the Initial Parcel #1 Proposed Plan was held from September 15, through October 15, 2003, and a public meeting was held on September 30, 2003. The Air Force's responses to comments received during the public comment period are included in the Responsiveness Summary, which is Section 3 of this ROD.

2.3 Scope and Role of Initial Parcel Sites or Response Action

In this section, the scope and role of this ROD is explained in the context of the larger IRP at McClellan. The role of previous and planned response activities that affect the sites in this ROD are explained.

2.3.1 Overall Site Cleanup Strategy

For environmental management (EM) purposes, McClellan has subdivided the Base into 11 OUs. Each OU corresponds to an area of the Base where specific industrial operations and/or waste management activities have taken place. The 11 OUs currently designated at McClellan are A, B, B1, C, C1, D, E, F, G, H, and the Groundwater OU, which encompasses the entire Base. The OU boundaries are shown on Figure 2-1. This ROD addresses remedial actions for non-VOC contamination in the Initial Parcel. The sites are located within portions of OUs A, B, and H.

Because of the complexity inherent in the different types of contaminants present at McClellan; the presence of contamination in the soil, sediment, and groundwater; and the large extent of contamination across the Base; the investigation and remediation of contamination at the Base under the IRP is subdivided into several programs. This sub-division allows for more efficient planning and implementation of each project.

This discussion of the interaction of remedial programs is focused on those that relate to the Initial Parcel RODs for non-VOC contaminants. The Initial Parcel sites were screened and grouped to allow the sites to move expeditiously through the FS and ROD processes, thereby facilitating transfer of the Initial Parcel to the LRA. Complex sites such as landfills, sites with radiological contamination, or sites that pose a risk to ecological receptors were excluded from the Initial Parcel so that transfer of the Initial Parcel as a whole would not be delayed. The complex sites that were excluded from the Initial Parcel will be addressed in subsequent FS and ROD documents (e.g., small volume sites, strategic sites, and ecological sites).

For the Initial Parcel sites requiring a remedial action for only non-VOCs in soil, each analyte will be remediated to a concentration equivalent to the lesser of a carcinogenic risk

of 1 x 10^{-6} or a non-carcinogenic hazard quotient (HQ) of 1. The selection of this remedial action is documented in this ROD. If non-VOCs and VOCs in shallow soil or soil gas (0 to -15 feet bgs) are present at the site and require remedial action, the action will be documented in the appropriate ROD (i.e., Initial Parcel ROD #2 or #3), and sites with VOCs in deeper soils will be addressed in the VOC ROD. Each VOC and non-VOC contaminant in soil will be remediated to a concentration that is equivalent to the lesser of a carcinogenic risk of 1 x 10^{-6} or a non-carcinogenic HQ of 1.

The steps in the overall cleanup process are summarized below with the specific activities addressed in this ROD shown in bold text:

- Separate the investigation and remediation of contamination across the Base into distinct programs (groundwater, soil gas, radiation, ecological, and soils)
- Due to McClellan's dynamic environmental program, periodic cleanup program strategy revisions (like the breakups of the Initial Parcel ROD and VOC ROD) are made to reflect new information and increase program efficiency.
- **Address non-VOC contamination in soils within phased RODs**
- **Address six (non-VOC CERCLA contaminated) sites in this first soil cleanup ROD (i.e., Initial Parcel ROD #1).**
- Address remaining Initial Parcel sites in subsequent RODs (i.e., Initial Parcel ROD #2, Initial Parcel ROD #3)
- Address remaining non-VOC contaminated soil sites in the subsequent Small Volume Sites ROD and the Strategic Sites ROD
- Develop work plans and complete remedial actions associated with the sites documented in this ROD

While the Base was operational, wastes were managed under both pre- and post-RCRA legislation. None of the sites addressed in this ROD were RCRA-permitted facilities. Historically, the Base did maintained RCRA-permitted storage facilities at several different locations. As part of the base closure and decommissioning process, the permitted facility was successfully closed out under RCRA guidance. Additionally, a PCB storage facility (Building 624D) was closed under RCRA guidelines with State oversight.

2.3.2 Past Removal Actions

In 2001, the Air Force took a non-time-critical removal action to address non-VOC contamination at one of the sites addressed in this ROD, PRL S-033. The site covers approximately 2 acres and consists of a warehouse and associated loading docks, and surrounding property. Approximately 400 cubic yards of PAH-contaminated soil were excavated and disposed of offsite, from an area adjacent to one of the loading docks. Confirmation samples were obtained, and a final risk assessment determined that the cleanup goals were achieved. The site was backfilled with clean soil and the site has been restored. The Air Force and EPA have determined that no further action is required for this site as is documented in this ROD.

None of the sites addressed in this ROD are included in an Interim ROD for soil. Two Interim ROD s are in existence at this time – the OU B1 Interim ROD, which maintains an asphalt cap over existing PCB contaminated soils; and the Groundwater Interim ROD, which facilitated the early groundwater remediation activities.

2.3.3 Activities Proposed in this ROD

This ROD addresses only non-VOCs in soil at six (CERCLA contaminated) sites within the Initial Parcel. Cleanup levels to support unrestricted use require remediation of non-VOC contamination in soil until residual risk from each contaminant is at or below the lesser of a carcinogenic risk of 1×10^{-6} or a non-carcinogenic HQ of 1. Cleanup to support unrestricted use was selected because it will be more cost-effective than maintaining land use restrictions at the sites. If VOC contaminants are not present in soil or groundwater, the result will be property available for unrestricted use. If VOC contamination is present in groundwater or soil at the sites, additional actions may be required before unrestricted land use will be allowed as discussed in the following section.

2.3.4 Future Response Plans

Remedial actions may be required to address VOC contamination present in soil and groundwater. VOC contamination in groundwater and in soil that presents a threat to groundwater will be addressed in the pending Basewide VOC ROD. With the exception of the sites included in this ROD, VOC contamination in shallow soil at depths less than 15 feet that presents a threat to human health or groundwater will be addressed in the same ROD as the non-VOC contamination for that site. For the sites included in this ROD, the VOC contamination in shallow soil will be addressed in a future (but undetermined) ROD.

After all remedial actions have been taken, and total site chemical risk has been determined, the Base Realignment and Closure Cleanup Team will evaluate the residual risk at the site. In most cases, the residual risk will be within the target risk range of (1×10^{-6} to 1×10^{-4}) for Superfund sites as set forth in NCP Section 300.430. The residual risk will be quantitatively evaluated and may not be appropriate where many individual chemicals are present so that the residual risk significantly exceeds 1×10^{-6}. Upon land transfer by a Finding of Suitability for Early Transfer, the residual risk for contaminants in soil for the land parcel will be qualitatively evaluated. The factors to be considered will include whether other adjacent property has contaminants (e.g., non-VOCs, VOCs, radiological or petroleum constituents) present at levels of concern.

2.4 Site Characteristics

An overview of the site characteristics for the six (CERCLA contaminated) sites included in this ROD is presented in the following sections. Site information and data are provided for each of the six sites to develop a basis for the selected remedy. The site characteristics primarily focus on non-VOCs in soil and sediment. Each site summary is organized as follows:

- **Site Overview and Features**: This brief section includes background information about the site and any significant surface or subsurface features.

- **Source of Contamination**: Briefly summarizes the known or suspected source(s) of contamination.
- **Sampling Strategy and Type of Contamination**: Provides a summary of the previous investigations performed at the site, including the type of media sampled and the constituents analyzed.
- **Location of Contamination**: Site characterization data are discussed, including the nature and extent of contamination.
- **Contamination Exposure and Migration**: Briefly discusses the potential surface and subsurface routes of human and environmental exposure and the likelihood of migration.
- **Current and Potential Future Site and Resource Uses**: Provides a summary of the current and reasonably anticipated future use of the site.

An ecological risk assessment was not conducted for the sites addressed in this ROD because no significant ecological habitat was found during the initial ecological screening of sites conducted during the RI process. Although a subsequent inventory of vernal pools at McClellan was developed, it was determined that none of the sites are located within the watershed of the vernal pools. Therefore, no further information pertaining to ecological risk assessments is presented in this section.

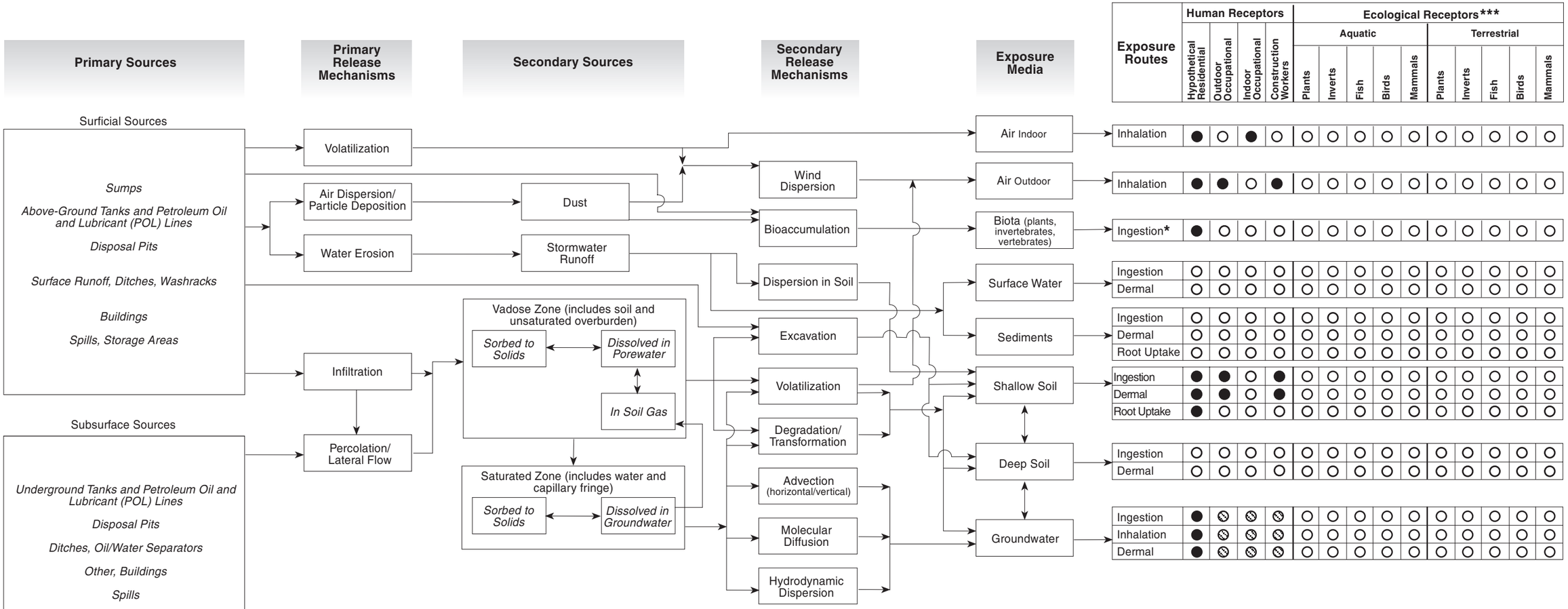
To illustrate the contaminant distribution and transport and environmental and human health risk, a conceptual site model was developed for the Initial Parcel sites evaluated in this ROD. The conceptual site model is used to develop an understanding of the site and to evaluate potential risks to human health and the environment. The non-VOC conceptual model was developed in accordance with EPA guidance and includes known and suspected sources of contamination, types of contaminants and affected media, known and potential routes of migration, and known or potential human and environmental receptors (EPA, 1988). The information for the contaminant sources, transport pathways, and receptors is simplified and depicted schematically to enable the model to aid in remedy selection for non-VOC contamination. This conceptual site model applies to all Initial Parcel sites discussed in this ROD, and is presented in Figure 2-3.

2.4.1 PRL S-014

2.4.1.1 Site Overview and Features

PRL S-014 is located in OU A in IC 26 and consists of Buildings 17 and 22. The site encompasses an area of approximately 0.5 acre and is mostly covered with asphalt, concrete, or buildings. On the north side of Building 22, landscaped grass is present, and a narrow unpaved strip is present on the eastern side of the site. Building 22 was a former motor pool area. Two USTs and a pump island, a paint facility, a hazardous waste storage area, and a washrack were present. The USTs were variously reported as gasoline and waste solvent storage tanks or gasoline and diesel tanks.

PRL S-014 is adjacent to SA 041 to the south, and SA 034 to the southeast. The site is also adjacent to Building 21 to the west, which is not an IRP site, and Peacekeeper Way to the north.



NOTES

- ● Potentially complete pathways described in this ROD.
- ⊘ Potentially complete pathway, but not described in this ROD.
- ○ Incomplete pathway for this scenario.
- * Ingestion of homegrown produce.
- ** Plants may take up contaminants and hypothetical residents may be exposed through ingestion of homegrown produce affected by contaminants.
- *** For the sites included in this ROD, there is no significant ecological habitat. Therefore, no complete exposure pathway exists for ecological receptors.

FIGURE 2-3
EXPOSURE PATHWAY ANALYSIS
INITIAL PARCEL RECORD OF DECISION
FORMER McCLELLAN AIR FORCE BASE
SACRAMENTO, CALIFORNIA

CH2MHILL

E022004001RDD_904 (4/7/04)

2.4.1.2 Source of Contamination

The Preliminary Assessment identified fuels, oils, solvents, PCBs, paints, and metals as COC (Radian, 1991). However, based on the results of several investigations, metals, VOCs, and PCB contamination were determined to be present at the site. The likely source of PCB contamination is the transformer located on the north side of Building 22. The motor pool operation is also a potential source of contamination for the VOCs and metals.

Following is a list of documents, in chronological order, that were used to prepare this summary:

Radian. 1991. OU A Preliminary Assessment. February.

RWQCB. 25 August 2000. Letter: *No Further Action, USTs at Building 22, McClellan Air Force Base* with attachments from the *Underground Storage Tank Site Closure Report Tank Site 22 McClellan Air Force Base California* prepared by LRA Engineering in June 1996.

Jacobs. 2001. *Operable Unit A Remedial Investigation Characterization Summaries.* Final. September.

Text: Vol. 1, IC 26, pp. 1-28

Jacobs. 2002. *Operable Unit A Remedial Investigation Characterization Summaries Addendum*. Final. March.

Text: Vol. 1, PRL S-14, pp. 1-14
Hits Table: Vol. 1, PRL S-14, Attachment 1, pp. 1-7
All Data: Vol. 2, Appendix 1, PRL S-14 (PS14), pp. 12-22, 32-44
Human Health Risk Assessment Data: Vol. 3, Appendix 3, Section 1.4.1, pp. 1-7, Tables 1.4.1.10 to 1.4.1.16

CH2M HILL. 2003. *Initial Parcel Feasibility Study #1.* Final. August.

Risk Assessment (for PCBs only): Vol. 2, Appendix G, pp. G2-3 – G2-10
Data Gaps Investigation Results, Vol. 2, Appendix E, pp. E2-6 – E2-11
Data Summary and ESF excerpts, Vol. 1, Appendix H, Section 2, pp. H2-1 – H2-9

2.4.1.3 Sampling Strategy and Type of Contamination

During the Phase 1 and Phase 2 RIs and the Data Gap 3 investigation, soil, soil gas, and groundwater samples were collected from several borings from 1992 to 2000. The samples were analyzed for metals, SVOCs, TPH, and VOCs (OU A RICS Addendum, March 2002). During 2002, additional soil samples were collected and analyzed for PCBs as a part of the Initial Parcel FS #1 data gaps sampling effort (Initial Parcel FS #1, Appendix E, August 2003). PCBs were never sampled during the RI, although they were identified as COC during the Preliminary Assessment (Jacobs, 2002).

During the RI, 16 soil samples from six borings were collected and analyzed for metals. Ten metals were detected in the soil samples above background levels (arsenic, beryllium, calcium, copper, chromium, lead, potassium, sodium, zinc, and vanadium). As documented in the OU A RICS Addendum (Volume 3, Appendix 3, Section 1.4.1, pg. 1), only six of the ten metals were reported in the soil samples at concentrations that are greater than the

normal variance of their background based on a statistical analysis (arsenic, beryllium, copper, lead, vanadium, and zinc). Only one SVOC detection (diethylphthalate [DEPH]) was reported in 2 of the 8 samples analyzed for SVOCs. TPH-G was not detected in any of the 6 samples analyzed, and TPH-D was not detected in any of the 10 samples analyzed. VOCs were reported in five samples collected from three borings.

During the Initial Parcel FS #1 data gaps investigation, seven soil samples were collected south of Building 22 and analyzed for PCBs. The laboratory results indicated that no PCBs were detected in the samples, with the exception of one location (see PCB summary below). However, PCBs were detected in several soil samples collected north of Building 22.

2.4.1.4 Location of Contamination

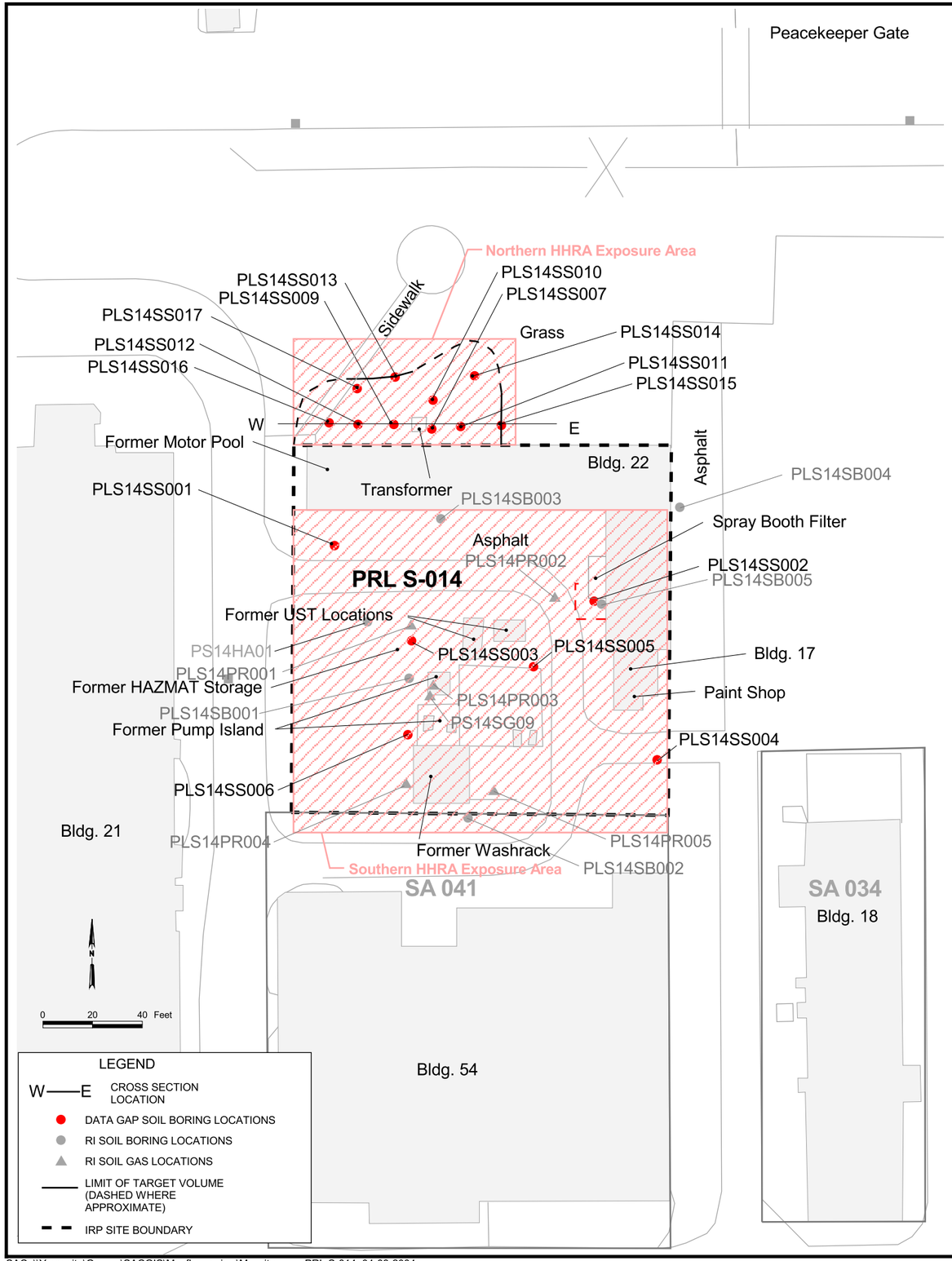
The following sections describe the lateral and vertical extent of contamination at PRL S-014. Metals and PCBs were determined to be present at the site, and both arsenic and PCBs may pose a risk to human health and the environment. Figure 2-4 identifies the site location and significant site features.

Metals. Based on a comparison of the metals concentrations to the screening levels for protection of human health and the environment used in the FS, only arsenic (by methods SW6010 and SW7060) and cadmium (by method SW6010) exceeded these screening levels. Of these two metals, only arsenic was determined to be present at concentrations greater than the normal variance of background (OU A RICS Addendum, Volume 3, Appendix 3, Section 1.4.1, pg. 1). However, as discussed below, the metals contamination was determined to not be of significance.

During the Initial Parcel FS #1 evaluation, maximum contaminant concentrations were evaluated against combined background concentrations. Combined background concentrations are background values for naturally occurring elements (e.g., metals and minerals), which have been established specifically for McClellan (Basewide Background Study, Radian 1994). These background values were established for separate lithologies (i.e. sands vs. silts and clays). Since McClellan soils tend to be a mixture of these lithologies, the "combined" background concentration represents a statistical combination of all the background values in the data set for each element.

Arsenic and cadmium were typically analyzed by Method SW6010 in phase I of the RI (prior to 1995), then later by Methods SW7060 and SW7131, respectively. The change was made to SW7060 and SW7131 during phase II of the RI because inter-element interferences were found to sometimes bias high in SW6010 results for certain elements, such as arsenic and cadmium. The SW7000-series analyses are element specific and, therefore, not prone to interference effects.

At PRL S-014, results from the Method SW6010 analysis for arsenic contained reported detections in four of four samples – all from PS14HA001. The maximum reported detection was 10 milligram/kilogram (mg/kg) from a depth of 2.5 feet below ground surface (bgs). Subsequently, 12 soil samples were collected from five locations for analysis by Method SW7060. The nearest of the five locations was approximately 30 feet southeast of PS14HA001 and approximately 20 feet southwest of the former UST and hazardous waste



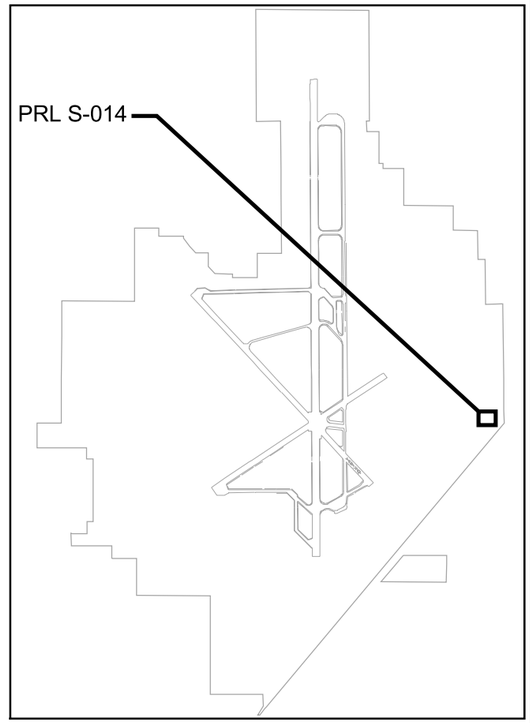
SELECTED CONTAMINANT CONCENTRATIONS

Soil Boring	Depth (feet bgs)	PCB (mg/kg) [a]
PLS14SS002	**0**	**0.062**
PLS14SS007	**0**	**5.62 / 5.93**
	1	**0.156**
	3	0.022J
PLS14SS009	**0**	**0.426**
	1	0.027J
	3	ND
PLS14SS010	**0**	**0.368**
	1	**0.064**
	3	0.016J
PLS14SS011	**0**	**0.477**
	1	0.013J
	3	ND
PLS14SS012	**0**	**0.264**
	1	0.008J
PLS14SS013	0	ND
PLS14SS014	**0**	**0.07**
PLS14SS015	0	ND
PLS14SS016	**0**	**0.561**
PLS14SS017	**0**	**0.034**

Bold Text - exceeds preliminary cleanup goal

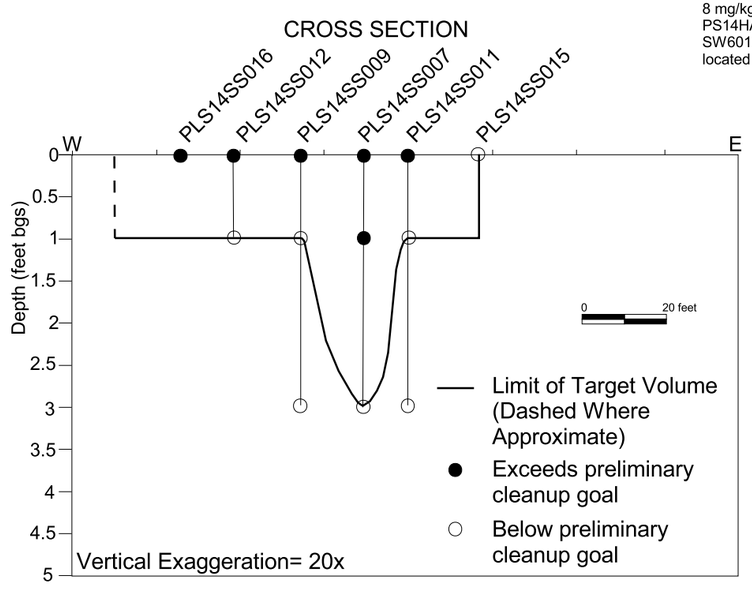
[a] Preliminary cleanup goal for PCBs in surface soil (0 to 1 foot bgs) is 0.0054 mg/kg and in shallow soil (1 to 15 feet bgs) is 0.063 mg/kg.

KEY MAP



NOTE:
The maximum concentrations of arsenic by method SW6010 are 8 mg/kg (0-2 ft bgs) and 10 mg/kg (0-10 ft bgs) located in boring PS14HA01. The maximum concentrations of cadmium by method SW6010 are 3.8 mg/kg (0-2 ft bgs) and 9.7 mg/kg (0-10 ft bgs) located in PS14HA01.

CROSS SECTION



PRL S-014 FIGURE 2-4
SITE FEATURES MAP
LRA INITIAL PARCEL RECORD OF DECISION #1
FORMER McCLELLAN AIR FORCE BASE
SACRAMENTO, CALIFORNIA

SAC \\Yosemite\Groups\SACGIS\Mcafb_arcview\Mc_sites.apr PRL S-014 04-08-2004

storage area. Because these sample locations were not coincident, there is some uncertainty regarding the characterization of arsenic at the site. Soil samples from beneath the hazardous waste storage area will be collected and analyzed for metals during the remedial design phase.

Results from the SW7060 analysis reported concentrations in three of the samples exceeding the combined background concentration of 4.9 mg/kg. The maximum reported concentrations were 7.1 and 7.4 mg/kg from 10-foot-deep samples collected adjacent to a former fuel pump island and a former washrack, respectively. These two soil borings were approximately 60 feet apart. The arsenic concentrations from shallow and deeper samples collected from the same borings were less than 3 mg/kg.

Similarly, cadmium was reported in four samples, from a single hand-auger boring, (analyzed by Method SW6010) to a maximum concentration of 9.7 mg/kg. However, samples collected from a soil boring approximately 30 feet away, (analyzed by SW7131) reported no hits above the combined background concentration of 0.4 mg/kg.

Based on this evaluation, metals were determined to not be significant contaminants at PRL S-014 and were not identified as COCs.

PCBs. Samples for PCB analysis were collected at locations north and south of Building 22. South of the building, only one sample (PLS14SS001) exceeded the field screening level of 1 mg/kg; however, interference from overlying road-base material may have triggered this false positive result. A subsequent sample collected at about 1 foot into native material did not exceed the field screening level, and the confirmatory laboratory result indicated non-detect for both samples. All other results were non-detect, with the exception of one sample collected near the waterfall paint spray booth area south of Building 22 in boring PLS14SS02. This sample contained a laboratory-reported concentration of 0.062 mg/kg.

On the north side of Building 22, several samples exceeded the field screening level. All samples collected for field screening were also submitted for confirmatory laboratory analysis. As indicated during the field screening, the highest reported laboratory concentration was the sample collected immediately adjacent to the transformer. A result of 5.93 mg/kg for PCB-1260 was reported at the surface. Samples collected at 1 and 3 feet bgs had results of 0.156 mg/kg and 0.022 J mg/kg, respectively. The majority of the reported detections were limited to the surface samples with occasional detections at 1 foot bgs. Concentrations typically decreased an order of magnitude with each subsequent sample depth. The extent of the PCB-1260-affected area appears to be fairly limited laterally to within approximately 20 feet of the transformer and to an approximate depth of 2 feet bgs. The contamination lies primarily in an east-west direction parallel to the building and is mostly west of the transformer. PCB-1260 was the only arochlor mixture detected in the samples using test method SW8082.

The transformer located north of Building 22 is still in service, but no longer contains the PCB oils, which most likely caused this contamination. Transformers containing PCBs were phased out of service at McClellan in the early 1990s. PCB samples were collected immediately outside and down-slope (with regard to surface water run-off direction) of the former hazardous waste storage area. No samples were collected from beneath the storage

area itself. Soil samples from beneath the hazardous waste storage area will be collected and analyzed for PCBs during the remedial design phase.

SVOCs and TPH. Eight soil samples were collected from three borings and analyzed for SVOCs. Two of the locations were within 30 feet of the former USTs and hazardous waste storage area. There were no reported SVOC detections at the site except for DEPH. This common laboratory contaminant was reported in two of the eight samples at a maximum concentration of 0.1 mg/kg. The SW8270 analysis included analysis of PAHs at reporting limits ranging from 0.019 to 0.3 mg/kg. No PAHs were detected. Soil samples from beneath the hazardous waste storage area will be collected and analyzed for PAHs during the remedial design phase.

Two USTs were apparently used from approximately 1938 to 1979. Descriptions of these tanks are either gasoline and waste solvent storage tanks or gasoline and diesel storage tanks. UST removal confirmation samples were taken in March 1996 by LRA Engineering. Four borings were installed in the area of the former USTs. Two borings were completed to 50 feet bgs, and two were completed to 20 feet bgs. Soils were analyzed for TPH-G and TPH-D; benzene, toluene, ethylbenzene, and xylenes; and methyl-tertbutylether (MTBE). Fuel releases from the USTs do not appear to have been significant because no contaminants were detected in the confirmation samples from the vicinity of the former USTs. Detection limits for TPH-G and TPH-D were 1 mg/kg, 5 micrograms per kilogram (µg/kg) for benzene, toluene, ethylbenzene, and xylenes compounds, and between 5 and 250 µg/kg for MTBE. The highest detection limit for MTBE was from a sample collected at 5 feet bgs (at location H2-5). However, no other contaminants were reported in that sample or in two adjacent soil gas samples (with the exception of carbon tetrachloride discussed in the next subsection) collected at 7 feet bgs during the RI (PLS14PR001 and PLS14PR003). The RWQCB has concluded that no further action is required for these USTs (RWQCB, 2000). As discussed in the following subsection, only low levels of VOCs were detected in SSG samples collected adjacent to the former USTs, thereby providing further evidence that a significant release of waste solvents did not occur.

TPH-G was not detected in any of the 6 samples analyzed during the RI. TPH-D was not detected in any of the 10 samples analyzed from the site during the RI.

VOCs. VOCs analyzed by TO-14 were reported in five samples collected from three borings prior to 1997. The highest reported VOC concentration was carbon tetrachloride at 180 J parts per billion by volume (ppbv) at 8 feet bgs. Additionally, during the Data Gap 3 investigation, carbon tetrachloride was detected at 300 J ppbv at 7 feet bgs and Freon 11 was detected at 490 J ppbv at 6.8 feet bgs. Four of the shallow soil gas samples were collected within approximately 20 feet of the former USTs (PLS14PR001, PLS14PR002, PLS14PR003, and PS14SG09) with three of the four samples having detections of carbon tetrachloride. VOC contamination in soil gas at the site will be addressed in a subsequent ROD.

Trichloroethene (TCE) and xylenes were detected above detection limits, but below equivalent water quality goals in groundwater. Groundwater has been impacted by VOCs from a source to the northwest in OU H (Jacobs, 2000).

2.4.1.5 Contamination Exposure and Migration

Potential future exposure of residents or workers to contaminated soil is the most significant exposure pathway for PRL S-014. Potential exposures also include the migration of VOCs to indoor air. Potential exposure may also occur when shallow soils are brought to the surface by excavation, drilling, or construction while implementing the remedial action.

The likelihood of migration to other media is minimal since the contamination is located in the upper 3 feet bgs of the site and detected contaminants are relatively immobile. There was no threat to groundwater based on the evaluation in the Initial Parcel FS #1, however there is a potential impact to surface water due to PCB contamination.

2.4.1.6 Current and Potential Future Site and Resource Uses

The predominant current land uses at McClellan include industrial, aviation, and residential. There are also some open areas present that are not currently used for any of these purposes. The entire site (buildings and outdoor areas) is unoccupied at this time, awaiting a tenant through a lease arrangement with McClellan Park.

In the future, PRL S-014 will likely be used for commercial/industrial or mixed-use purposes. However in the Initial Parcel FS #1, various scenarios were evaluated in the human health risk assessment, including the residential scenarios, to provide information to evaluate the range of potential uses for the site and to make future risk-management decisions.

2.4.1.7 Human Health Risk Assessment

The results of the baseline risk assessment for PRL S-014 are provided in Appendix A, Section A1. Risks were estimated for two exposure areas PRL S-014 (South) and PRL S-014 (North). PRL S-014 (South) is the area south of Building 22. PRL S-014 (North) is located north of Building 22 and is associated with PCB contamination adjacent to the transformer.

Both residential and occupational exposure scenarios were evaluated for PRL S-014 (South) and PRL S-014 (North). The risk results for these scenarios are summarized below and presented in the text and risk summary tables of Appendix A.

Risk Characterization. The potential cancer risks for PRL S-014 (South) are as follows:

- Future adult resident (0 to 2 feet bgs depth interval): 8×10^{-5}
- Future adult resident (0 to 10 feet bgs depth interval): 1×10^{-4}
- Future adult resident (0 to 2 feet bgs depth interval excluding produce pathway): 2×10^{-5}
- Future adult resident (0 to 10 feet bgs depth interval excluding produce pathway): 1×10^{-5}
- Future adult resident (0 to 2 feet bgs depth interval) and groundwater: 8×10^{-5}
- Future adult resident (0 to 10 feet bgs depth interval) and groundwater: 1×10^{-4}
- Future adult resident (groundwater only): 2×10^{-6}
- Outdoor occupational worker: 3×10^{-6}
- Indoor occupational worker: 1×10^{-8}
- Future construction worker: 2×10^{-6}

The main contributor to the cumulative risks for the residential scenarios is the ingestion of arsenic in homegrown produce. Potential risks associated with VOCs and PCBs in soil were all below 1×10^{-6}. Potential risks associated with VOCs in groundwater were 2×10^{-6}.

The potential cancer risks in soil for PRL S-014 (North) are as follows:

- Future adult resident (0 to 2 feet bgs depth interval): 5×10^{-5}
- Future adult resident (0 to 10 feet bgs depth interval): 2×10^{-5}
- Future adult resident (0 to 2 feet bgs depth interval excluding produce pathway): 1×10^{-5}
- Future adult resident (0 to 10 feet bgs depth interval excluding produce pathway): 1×10^{-5}
- Outdoor occupational worker: 5×10^{-6}
- Future construction worker: 4×10^{-7}

The sole known contaminant in PRL S-14 (North) is PCB as Aroclor 1260, and the main pathway contributing to the risk estimates for the residential scenarios is the homegrown produce pathway. The risk estimate for the future adult resident for soil (0-10 feet bgs depth interval) and groundwater is at the upper end of the US EPA risk management range. All other estimated risks are within or below the range.

For PRL S-014 (South), the noncancer hazard indices for the future adult residential scenario are less than 1 for both soil intervals (0 to 2 and 0 to 10 feet bgs) even with the addition of groundwater pathways. In addition, the hazard indices are also less than 1 for the indoor occupation worker, outdoor occupation worker, and future construction worker scenarios. The potential for adverse noncancer health affects for the adult resident and worker scenarios is unlikely at PRL S-014 (South). However, the main contributor to the hazard index for the child residential scenario is the HQ for arsenic for the homegrown produce pathway. The following shows that some of the hazard indices for some of the future child resident scenarios exceeded 1:

- Future child resident (0 to 2 feet bgs depth interval): 1
- Future child resident (0 to 10 feet bgs depth interval): 2
- Future child resident (0 to 2 feet bgs depth interval excluding the produce pathway): <1
- Future child resident (0 to 10 feet bgs depth interval excluding the produce pathway): <1
- Future child resident (0 to 2 feet bgs depth interval) and groundwater: 1
- Future child resident (0 to 10 feet bgs depth interval) and groundwater: 2
- Future child resident (groundwater only): 0.1

The potential noncancer risks for PRL S-014 (North) are as follows:

- Future adult resident (0 to 2 feet bgs depth interval): 2
- Future adult resident (0 to 10 feet bgs depth interval): <1
- Future adult resident (0 to 2 feet bgs depth interval excluding the produce pathway): <1
- Future adult resident (0 to 10 feet bgs depth interval excluding the produce pathway): <1
- Future child resident (0 to 2 feet bgs depth interval): 8
- Future child resident (0 to 10 feet bgs depth interval): 3
- Future child resident (0 to 2 feet bgs depth interval excluding the produce pathway): 3
- Future child resident (0 to 10 feet bgs depth interval excluding the produce pathway): 1
- Outdoor occupational worker: <1
- Future construction worker: <1

There is a potential for adverse noncancer health effects from exposure to PCBs in soil for the adult resident (0 to 2 feet bgs depth interval) and the child resident scenarios. The main

pathway contributing to the hazard indices for these residential scenarios is the homegrown produce pathway.

For PRL S-014 South, blood-lead levels were estimated using soil lead concentrations and Lead-spread 7; estimated blood-lead levels were below the target level of 10 micrograms per deciliter (µg/dL) in 99 percent (0.01 risk) of potentially exposed adult and child residents, outdoor workers, and construction workers.

Based on the risk assessment, the potential cancer risk from groundwater exposure for future adult residents is 1.6 x 10-6. The main contributor to the potential cancer risk is TCE. For groundwater, the noncancer hazard index for the future adult resident is 0.05 and the hazard index for the future child resident is 0.1. The main contributor to the hazard indices is TCE.

Uncertainties. There are uncertainties associated with the risk estimates for PRL S-014. These are listed briefly below with additional discussion provided in Section A1 of Appendix A:

- Current re-use plans for this site are indefinite.
- The partition coefficients used to estimate potential risks from the homegrown produce pathway for Aroclor-1260 and arsenic are uncertain.
- Toxicity criteria for some VOCs and arsenic have changed since the human health risk assessment was conducted. (See Appendix A, Section A1.5 for a discussion of specific toxicity criteria changes.)
- Only PCB data are available for PRL S-014 North.
- An uncertainty exists with the soil beneath the former hazardous waste storage area due to the lack of soils samples.
- Arsenic was detected at concentrations that appear greater than the "combined" background concentration at selected locations, primarily in samples analyzed by Method SW6010. These SW6010 data were not used for the risk assessment. The maximum reported concentrations of arsenic by the preferred analytical method, Method SW7060, are less than the maximum reported concentrations by Method 6010. In addition, the sporadic elevated concentrations are not indicative of a contaminant source. Therefore, the risk associated with arsenic at this site may be representative of background.

Basis for Action. The risk estimates for PRL S-014 north exceed a hazard index of 1 and the USEPA's threshold of acceptable risk (i.e., the excess cancer risk exceeds $1x\ 10^{-6}$ for the residential scenario) due to the presence of PCB-1260 in soil.

Although there is no threat to groundwater quality from the PCB contamination, there is a potential to impact surface-water quality. Therefore, the response action selected in this ROD is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances in the environment.

2.4.2 PRL S-033

2.4.2.1 Site Overview and Features

PRL S-033 is in the northwestern portion of OU B along the western boundary of the Base. PRL S-033 was the location of a former chemical storage and chemical waste storage facility inside Building 786A. The site covers approximately 2 acres, and Building 786A comprises approximately 80,000 square feet. Building 786A and its associated loading docks are surrounded by asphalt-covered parking areas, a grass-covered area to the west, and railroad tracks to the east (Radian, 1995). There are several drainage depressions and connecting culverts beneath the roadways west of the loading dock on the northwestern side of Building 786A (URS, 2002d). Surface water that flows to the north of the dock drains into an unlined drainage canal. The unlined drainage canal (located west of PRL S-033) flows to Magpie Creek (URS, 2002d). Surface water that flows to the south of the dock (located on the western side of Building 786A) flows to stormwater drains that discharge into Magpie Creek (URS, 2002d).

Building 786A served as a collection point for chemical wastes for most industrial facilities on Base from the mid-1950s until 1980 (Radian, 1995). Drums were loaded and unloaded at docks located on the south, west, and east sides of the building. Materials handled in the area include paints, solvents, acids, bases, unspecified VOCs and SVOCs, fuels, and oils. Building 786A was used for office space, a boiler room, and furniture storage area after 1980.

CS 023 is the closest IRP site to PRL S-033, located just southwest of the site. There are no other IRP sites immediately adjacent to PRL S-033. Directly south of PRL S-033 is a parking lot; north is Bay B of Building 786 and; to the east is Building 783.

2.4.2.2 Source of Contamination

During the RI, TPH, SVOCs (mainly PAHs), and metals were detected; and PAHs were identified as the contaminant of potential concern. The primary source of PAH contamination was spills that occurred in the loading dock area on the northwestern side of Building 786A. In 2001, a PAH removal action was conducted.

Following is a list of documents, in chronological order, that were used to prepare this summary:

Radian. 1995. *Operable Unit B Remedial Investigation Characterization Summaries*. Final. December.

Text: Vol. 2, PRL S-33, pp. 1-16
All Data: Vol. 4, Appendix A, PRL S-33 (PS33), pp. 1-8
Human Health Risk Assessment Data: Vol. 8, Appendix C, PRL S-33

Roy F. Weston, Inc., and Kleinfelder, Inc. 2002. *Final Removal Action Report PRL S-033*. April.

Confirmation Soil Sampling Results: Section 5.2.2, pp. 24 – 25
Human Health Risk Assessment: Section 5.4, pp. 32 – 35

URS. 2002d. *Operable Unit B Data Gaps Remedial Investigation Characterization Summaries Addendum*. Draft Final. August.

Text: Vol. 2, Other Areas, PRL S-33, pp. 1-24
Hits Table: Vol. 2, Other Areas, PRL S-33, Attachment 1, pp. 1-3
All Data: Vol. 2, Appendix A, PRL S-33, pp. 1-5

CH2M HILL. 2003. *LRA Initial Parcel Feasibility Study #1*. Final. August.

Data Summary and ESF excerpts, Vol. 1, Appendix H, Section 3, pp. H3-1 – H3-7

2.4.2.3 Sampling Strategy and Type of Contamination

During the OU B soil gas investigation, the RI, and the Data Gap investigation, soil and soil gas samples were collected from several borings from 1991 to 1993 and again in 1998. The samples were analyzed for metals, SVOCs, TPH, and VOCs (soil gas samples only). During the removal action effort in 2001, soil samples were collected and analyzed for metals and SVOCs, including PAHs.

Prior to the RI, 9 soil gas samples were collected from PRL S-033 and analyzed for VOCs. Halogenated VOCs were detected. During the RI, 17 samples were collected and analyzed for SVOCs (all PAHs). Of the 17 samples, 7 were collected outside of the PAH excavation area. Although PAHs were detected, they were removed from the site according to the removal action efforts described in the PRL S-033 Removal Action Report (Weston and Kleinfelder, 2002). TPH-D was also detected in seven soil borings on the western side of Building 786A. On the south and east sides of Building 786A, metals were detected in shallow soil samples collected during the RI. Arsenic, chromium, cobalt, and nickel were detected above their background concentrations. These sample locations were outside of the PAH excavation area. Surface soil samples were also collected at the location of the two highest arsenic concentrations in the shallow soil samples.

During the removal action, pre- and post-excavation and backfill soil samples were collected and analyzed for PAHs. Backfill soil samples were also analyzed for metals and SVOCs. All metals, except copper, were detected below background concentrations defined in the PAH Removal Action Report (Weston and Kleinfelder, 2002).

2.4.2.4 Location of Contamination

The following sections describe the lateral and vertical extent of contamination at PRL S-033. PAHs, metals, and TPH-D were the primary contaminants. Figure 2-5 identifies the site location and significant site features, and Figure 2-6 provides the related post-excavation data for PAHs.

PAHs. PAHs were detected in surface and shallow soil samples collected from PRL S-033. However, PAHs have been removed according to the removal action efforts described in the final Removal Action Report for PRL S-033 (Weston and Kleinfelder, 2002). Post-removal action sampling indicated that maximum residual concentrations of benzo(a)pyrene at 0.020 mg/kg and dibenzo(a,h)anthracene at 0.029 mg/kg were detected slightly above their screening levels for the protection of human health (0.011 mg/kg and 0.021 mg/kg, respectively) (Table 5-2, Removal Action Report, Weston and Kleinfelder, 2002). However, based on the removal action report, these PAHs were below the 1999 EPA Region 9

residential preliminary remediation goal of 0.062 mg/kg for both benzo(a)pyrene and dibenzo(a,h)anthracene (Weston and Kleinfelder, 2002). The exposure point concentrations used to assess the human health risk at the site were 0.0023 mg/kg for benzo(a)pyrene and 0.0031 mg/kg for dibenzo(a,h)anthracene (see Section A2 of Appendix A).

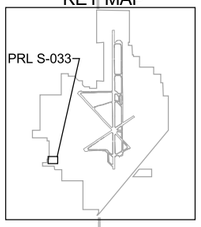
PAHs were also detected in two sediment samples collected outside the excavation area and northwest of PRL S-033. The sediments contained concentrations of benzo(a)pyrene (0.0049 mg/kg and 0.0029 mg/kg) that were less than the residential PRG (0.062 mg/kg) (OU B RICS Addendum). Each reported concentration exceeded the exposure point concentration (0.0023 mg/kg), but was within the range of detected concentrations; thus, no significant impacts to exposure point concentration are expected if these data were included in the exposure area.

Metals. Metals were also detected in surface and subsurface soil samples collected during the OU B RI. Shallow soil samples were collected in 10 locations (east, south, and west side of Building 786A). Beryllium (0.58 mg/kg) and iron (26,000 mg/kg) were detected below their combined background concentrations (0.7 mg/kg and 39,700 mg/kg, respectively). Arsenic, chromium, cobalt, and nickel were detected above their background concentrations as discussed below (OU B RICS, 1995, Vol. 4, Appendix A, PS33, pp. 1-8). The maximum concentrations of these metals were detected in soil borings located outside the excavation area for the PAH removal action.

Following are summaries of the metals analyses:

- Arsenic was analyzed in soil samples from 10 locations using Method SW6010, and at 2 adjacent locations using SW7060. (See Section 2.4.1.4 for a discussion of possible analytical bias for arsenic analyzed by method SW6010.) The samples for SW7060 analysis were located immediately adjacent to the highest reported concentrations of arsenic from the SW6010 analysis (Final OU B RICS, Vol. 4 of 9, soil data, pps. 1-8). The side-by-side comparison indicates an apparent high bias interference exists for the SW6010 arsenic data. In PS33H004, located on the south side of building, the SW6010 value for arsenic is 17 mg/kg. The adjacent sample analyzed with SW7060 is 5.26 mg/kg. Likewise on the east side of the building, PS33H008 had an SW6010 arsenic value of 18 mg/kg, and an SW7060 value of 4.6 mg/kg. The "combined" background concentration for arsenic is 4.9 mg/kg. Therefore, although the SW6010 data appear to be biased high, the SW7060 results suggest that results are within or slightly exceeding background concentrations, and no data gap for arsenic exists.
- Chromium was detected at concentrations greater than the "combined" background value of 48.3 mg/kg in 5 of 10 samples. Chromium was detected slightly above its maximum background concentration at 65.9 mg/kg in 3 of 10 shallow soil samples collected from soil borings PS33H004, PS33H005, and PS33H008 located south and east of the building. However, the maximum concentration of chromium detected at the site, 69 mg/kg, is below all screening levels for the protection of surface water, groundwater, and human health.
- Cobalt was detected above its "combined" background concentration (16.7 mg/kg) in 2 of 10 shallow soil samples collected from the site. One of these samples also had an elevated level of chromium. However, the maximum concentration of cobalt detected at

KEY MAP



PS33MS002

PS33MS001

Bldg. 786B

Lang Ave.

S33P01

9

18 10 2

19 11 3

20 12 4

21 13 5

22 14 6

23 15 7

16

S33P02

PRL S-033

Bldg. 786A

PS33S0001

PS33H008

S33P09

S33P08

PS33H007

S33P05

PS33S0002

S33P06

PS33H006

PS33H009

S33P03

PS33H003

S33P04

S33P07

PS33H005

Idzorek St.

PS33H004

N

0 25 50 Feet

LEGEND

- LOADING DOCK
- AREA OF EXCAVATION
- RAILROAD
- RI SOIL BORING LOCATIONS
- SHALLOW SCREENING SOIL GAS SAMPLE LOCATIONS
- RI SEDIMENT SAMPLE LOCATIONS

NOTE:
The two locations at the site of highest measured concentrations of metals detected by method SW6010 that exceeded background were PS33H004 and PS33H008.

RI Soil boring locations are not shown in the excavation area.
Grid numbers correpsond to the excavation confirmation sample locations summarized on Figure 2-6.

Arsenic: 17 mg/kg (PS33H004) and 18 mg/kg (PS33H008)
Chromium: 69 mg/kg (PS33H004) and 68 mg/kg (PS33H008)
Cobalt: 31 mg/kg (PS33H004) and 14 mg/kg (PS33H008)
Nickel: 91 mg/kg (PS33H004) and 64 mg/kg (PS33H008)

PRL S-033 FIGURE 2-5
SITE FEATURES MAP
LRA INITIAL PARCEL RECORD OF DECISION #1
FORMER McCLELLAN AIR FORCE BASE
SACRAMENTO, CALIFORNIA

SAC \Yosemite\Groups\SACGIS\Mcafb_Arcview\Mc_sites.apr PRL S-033 04-08-2004

PRL S-033 Confirmation Sampling Results (mg/kg)																		
Grid Number	Location[a]	Sample Number	Acenaphthene	Acenaphthylene	Anthracene	Benzo (a) anthracene	Benzo (b) fluoranthene	Benzo (k) fluoranthene	Benzo (a) pyrene	Benzo (ghi) perylene	Chrysene	Dibenz (ah) anthracene	Fluoranthene	Fluorene	Indeno (1,2,3-cd) pyrene	Naphthalene	Phenanthrene	Pyrene
2	bottom (1')	PS33SS094	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2	north wall (0.5')	PS33SS093	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3	bottom (2')	PS33SS083	ND	ND	ND	0.004	0.007	ND	ND	ND	0.005	ND	ND	ND	0.008	ND	ND	ND
4	bottom (3')	PS33SS095	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4	5'	PS33SS097	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4	east wall (0.5')	PS33SS098	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
5	bottom (1.5')	PS33SS099	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
5	east wall (2.75')	PS33SS100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
6	bottom (1.5")	PS33SS106	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
7	south wall (0.5')	PS33SS103	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
7	bottom (1')	PS33SS102	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
9	east wall (0.5')	PS33SS092	ND	ND	ND	0.014	0.018	0.009	0.017	0.02	0.014	0.025	0.018	ND	ND	ND	ND	0.019
9	north wall (1.0')	PS33SS091	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
9	west wall (0.5')	PS33SS088	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
9	bottom (1')	PS33SS089	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
10	bottom (0.5')	PS33SS078	ND	ND	ND	0.01	0.015	0.007	0.014	0.016	0.012	0.023	0.015	ND	0.014	ND	ND	0.016
11	bottom (1.5')	PS33SS084	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
12	bottom (0.5')	PS33SS073	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.007	ND	ND	ND
13	bottom (2')	PS33SS082	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
14	bottom (0.5')	PS33SS068	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
15	bottom (2.25')	PS33SS062	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
16	south wall (0.5')	PS33SS104	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
16	west wall (0.5')	PS33SS105	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
16	east wall (0.5')	PS33SS060	ND	ND	ND	0.01	0.012	0.006	0.01	0.013	0.013	ND	0.017	ND	0.015	ND	ND	0.017
16	bottom (1.5')	PS33SS061	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
18	bottom (1')	PS33SS079	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
18	north wall (0.5')	PS33SS080	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
18	west wall (0.5')	PS33SS081	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
19	west wall (0.5')	PS33SS087	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
19	bottom (1')	PS33SS075	ND	ND	ND	0.016	0.021	0.012	0.02	0.027	0.018	0.029	0.019	ND	0.024	ND	ND	0.021
19	bottom (1.5')	PS33SS085	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
20	bottom (0.5')	PS33SS074	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
21	west wall (0.5')	PS33SS069	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
21	bottom (1.5')	PS33SS070	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
22	west wall (0.5')	PS33SS066	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
22	bottom (1.5')	PS33SS067	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
23	south wall (0.5')	PS33SS086	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
23	bottom (1')	PS33SS065	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
23	west wall (0.5')	PS33SS057	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
ND= Not Detected
Data summarized from the *Final PRL S-033 Removal Action Report (Weston and Kleinfelder, 2002).*

[a] Indicates sample location in the grid (see Figure 2-5) and depth of sample.

PRL S-033 FIGURE 2-6
DATA TABLE
LRA INITIAL PARCEL RECORD OF DECISION #1
FORMER McCLELLAN AIR FORCE BASE
SACRAMENTO, CALIFORNIA

the site, 31 mg/kg, is below all screening levels for the protection of surface water, groundwater, and human health.

- Nickel was detected above its "combined" background concentration of 53.4 mg/kg in 4 of 10 shallow soil samples collected from the site. All four of the samples also had elevated chromium. The maximum concentration of nickel detected at the site, 91 mg/kg, is below its risk-based screening level for the protection of human health. Nickel detected in other borings at the site were below background.

During the removal action, all metals, except copper, were detected below the background concentrations as defined in the PAH Removal Action Report (Weston and Kleinfelder, 2002). The slightly elevated copper concentration was in a sample of backfill soil used following the removal action. The maximum reported concentration, 34 mg/kg, was less than the "combined" background concentration, 36.5 mg/kg, and the soil was determined to be acceptable for use as backfill (Weston and Kleinfelder, 2002).

Based on this information, metals were not considered significant contaminants at the site, and the remedial project managers have agreed with this conclusion.

TPH. TPH-D was detected in seven soil borings collected from the site. The maximum concentration of TPH-D measured at the site, 310 mg/kg, was detected in a surface soil sample collected from soil boring PS33H001. Although the maximum concentration is above the screening level for the protection of surface water and groundwater, the TPH was removed during the PAH removal action. Concentrations of TPH-D below the 100 mg/kg cleanup level remain in boring locations outside the excavated area.

VOCs. In 1991, a soil gas investigation was conducted with nine soil gas samples collected at the site at approximately 3 to 6 feet bgs. Detections of halogenated VOCs were reported at concentrations ranging from 1.5 to 32.5 ppbv (URS, 2002d).

2.4.2.5 Contamination Exposure and Migration

PAHs have been removed from PRL S-033; therefore, no human health impacts are expected as a result of contact with soil (see Section 2.4.2.7 for more details). There are no threats to surface water or groundwater remaining at this site. Migration is also not expected because there are no significant levels of contaminants present at the site.

2.4.2.6 Current and Potential Future Site and Resource Uses

PRL S-033 is currently being leased to Beutler Heating and Air Conditioning. In the future, PRL S-033 will likely continue to be used for commercial/industrial or mixed-use purposes. However, in the Removal Action Report PRL S-033, residential scenarios were evaluated in the human health risk assessment to provide information to evaluate the range of potential uses for the site and to make future risk-management decisions.

2.4.2.7 Human Health Risk Assessment

The results of the post-removal action risk assessment for PRL S-033 are provided in Section A2 of Appendix A, Section A2. The final human health risk assessment for PRL S-033 is based on 39 confirmation samples collected west of the building within the excavation footprint and analyzed for PAHs. Data collected from unexcavated areas at the

site and from imported soil used to fill the excavated area were not included in the risk assessment.

The potential cancer risk and the non-cancer hazard indices were estimated for the residential exposure scenarios at PRL S-033. These risk results were originally presented in a Removal Action Report for PRL S-033 and represent residual risks after the removal action was completed. Residential PRGs were used as cleanup goals for the removal action. Thus, the occupational scenario was not presented in the Removal Action Report.

No potential sources of groundwater contamination were identified at PRL S-033 during the RI (OU B RICS, Volume 2 of 9, PRL S-033, Section 4.2). No contaminants of concern were identified for groundwater at the site and groundwater samples have not been collected. Therefore, the groundwater exposure scenario was not evaluated.

Risk Characterization. The potential cancer risk for soil is as follows:

- Future adult resident (0 to 5 feet bgs depth interval): 6×10^{-7}

The potential noncancer risks for soil are as follows:

- Future adult resident (0 to 5 feet bgs depth interval): <1
- Future child resident (0 to 5 feet bgs depth interval): <1

The risk estimates for the residential scenarios are below EPA's risk management range. These risk estimates are based on a reasonable maximum exposure and were developed taking into account various conservative assumptions about the frequency and duration of the receptor's exposure to soil and the toxicity of the COCs. These risk and hazard estimates were for PAHs only. Metals and VOCs were excluded from the assessment, as VOCs were not COCs, and concentrations of metals present are representative of background.

Uncertainties. There are uncertainties associated with the risk estimates for PRL S-033. These are listed briefly below with additional discussion provided in Section A2 of Appendix A:

- Potential risks associated with low levels of VOCs in shallow soil gas and metals were not calculated for PRL S-033.
- Groundwater samples have not been collected for the site; therefore, risks from groundwater are not known.
- Although a site inspection noted no apparent spills in the building, the possibility exists that leaks may have migrated through foundation cracks to the subsurface.
- Future re-use plans for this site are indefinite, but do not include residential use.

Basis for No Action. The risk estimates for PRL S-033 are less than 1×10^{-6}, and there are no threats to surface water or groundwater remaining at this site. Therefore, no further action is warranted at this site under CERCLA to address non-VOC contaminants. VOCs detected in shallow soil gas will be evaluated in a future FS and ROD.

2.4.3 SA 003

2.4.3.1 Site Overview and Features

SA 003 is in the northern portion of IC 3, immediately south of Magpie Creek near the OU C boundary in the north-central portion of OU B. SA 003 consists of an uncovered vehicle washrack that is connected to a portion of the industrial wastewater line (PRL L-005E) and a former hazardous waste storage area. The site is approximately 0.5 acre in extent, and the sites closest to IC 3 are the aircraft painting facility (PRL S-031) and the hazardous waste storage area (PRL S-032) north of Magpie Creek in OU C. These sites are believed to be the source of groundwater VOC contamination beneath IC 3.

Operations at the washrack and hazardous waste storage area began in the mid-1960s. The hazardous waste storage area and washrack were used to support civil engineering construction and maintenance activities, but are no longer used. Some exposed soil is present around the hazardous waste storage area, the washrack, and the IWL lift station. The washrack and hazardous waste storage area are constructed of concrete.

SA 003 is surrounded by SA 010 to the southwest, SA 017 to the southeast, and SA 019 to the south. These sites are all within IC 3.

2.4.3.2 Source of Contamination

The potential sources of contamination at SA 003 are spills in the hazardous waste storage area, overflows at the washrack, and leaks from the IWL or its lift station. SVOCs, TPH, metals, and VOCs have been identified as potential contaminants. Based on the analytical results, two areas of contamination have been defined: an area of inorganic surface and subsurface soil contamination adjacent to the hazardous waste storage area and washrack, and an area of TPH subsurface soil contamination adjacent to the IWL/IWL lift station.

Following is a list of documents, in chronological order, that were used to prepare this summary:

Radian. 1995. *Operable Unit B Remedial Investigation Characterization Summaries*. Final. December.

Text: Vol. 1, IC 3, pp. 1-43
All Data: Vol. 3, Appendix A, IC 3, pp. 1-65

URS. 2002. *Operable Unit B Data Gaps Remedial Investigation Characterization Summaries Addendum*. Draft Final. August.

Text: Vol. 1, IC 3, SA 3, pp. 1-45
Hits Table: Vol. 1, IC 3, SA 3, Attachment 1, pp. 1-11
All Data: Vol. 2, Appendix A, SA 3, pp. 1-18
Human Health Risk Assessment Data: Vol. 3, Appendix C, Section 9.3 pp. C9.3-1 to C9.3-16, Tables 9.3-43 & 9.3-44

URS. 2003. *OU B Phase 1 Petroleum, Oils and Lubricants (POL) and Shallow Soil Gas (SSG) Remedial Investigation Characterization Summaries Addenda for Selected Sites, Volumes 1 and 2*. July.

CH2M HILL. 2003. *LRA Initial Parcel Feasibility Study #1*. Final. August.

Data Summary and ESF excerpts, Vol. 1, Appendix H, Section 5, pp. H5-1 – H5-10
May 2003 data from AFRPA: Vol. 1, Appendix H, Section 5, SA 003 Attachment 2

2.4.3.3 Sampling Strategy and Type of Contamination

Several field investigations were performed between 1987 and 2003 to evaluate surface-soil, vadose-zone, and groundwater contamination. The field investigations included surface and subsurface soil sampling, and the installation and sampling of one groundwater monitoring well immediately south of SA 003. Samples were analyzed for SVOCs, TPH, metals, and VOCs. The primary site contaminants are TPH and lead in surface and shallow soil. However, the extent of metals in soil has not been determined.

In addition, an excavation at an unknown location was performed in 1993 to remove surface soils impacted with inorganic species. Confirmation soil samples were reportedly collected after excavation, and no contamination was detected. Excavation and sampling records have not been located; therefore, the contamination status has not been determined.

In 2002, further sampling to define the extent of TPH contamination in soil was conducted during the POL/SSG Sites Phase 1 sampling effort. Seven samples were collected from two borings and analyzed for TPH constituents. In addition, three soil samples were collected by AFRPA from three soil borings in 2003 to better define the target volume[1] for remedial actions (Initial Parcel FS #1, Appendix H, SA 003 Attachment 2). While these data were not collected under an approved sampling and analysis plan (SAP), confirmation samples will be collected during the remedial action under an approved SAP to verify that the full extent of contamination is remediated.

2.4.3.4 Location of Contamination

The following sections describe the lateral and vertical extent of contamination at SA 003. TPH and lead are the primary contaminants, although the extent of metals contamination is unknown. Figure 2-7 identifies the site location and significant site features. Figure 2-8 provides the data from the RI sampling for the COCs addressed in this ROD.

SVOCs. One SVOC, DEPH, was detected in a single soil sample at a concentration of 1.8 mg/kg at a depth of 6.7 feet bgs, but does not exceed screening levels for protection of human health, surface water, or groundwater. Other SVOCs, such as PCBs, PAHs, and pesticides, have not been adequately characterized at the site. This data gap will be addressed during pre-excavation sampling or the remedial design.

TPH. During the RI, TPH-D concentrations 10,000 mg/kg and TPH-G concentrations of 29,000 mg/kg were identified at 9 feet bgs near the IWL lift station at SA 003 (soil boring PL5EB006). These concentrations exceed the screening levels for protection of groundwater of 100 mg/kg for TPH-D and 10 mg/kg for TPH-G. During the RI, TPH was detected as deep as 20 feet bgs; however, TPH concentrations detected in soil at depths greater than 9 feet bgs did not exceed screening levels for the protection of surface water and groundwater.

[1] A target volume refers to the engineering estimate of the amount of soil attributable to the contaminant plume.

NE

EXPOSED SOIL

CONCRETE HAZARDOUS WASTE STORAGE AREA

SA3HA004

SA3HA002

SA 003

IC03S0001

EXPOSED SOIL

IC03S0002

SA3SB005

SA3SB009U

685-SB01

SA3HA005

IWL LIFT STATION

PL5EB005

685-SB03

PL5EB006

IC03B016

IC03B017

SA3SB002

SA3SB007U

IC03B019

EXPOSED SOIL

SA3HA003

SA3HA001

SA3HA006

SA3SB006

685-SB02

IC03B013

SA3SB004

SW

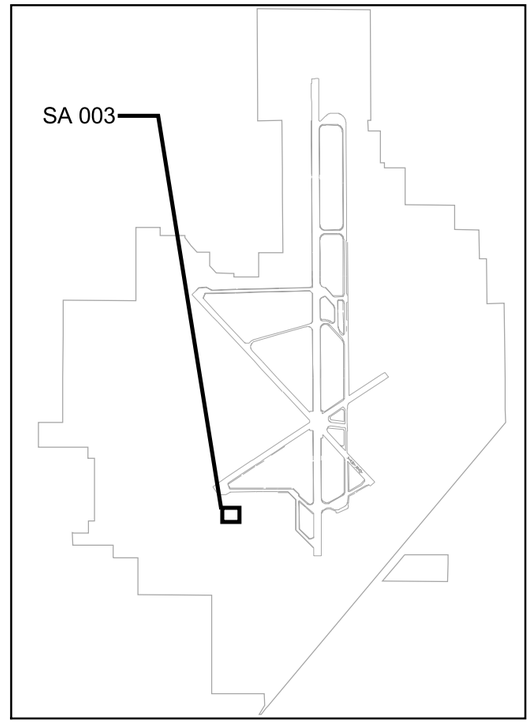
SA3SB001

SA3SB003

IC03B014

CONCRETE WASHRACK

KEY MAP



N

0 25 Feet

LEGEND

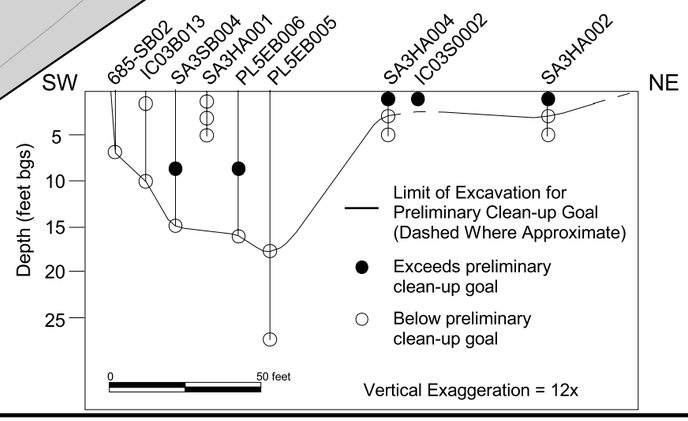
SW — NE CROSS SECTION LOCATION

SOIL BORING

PENDING DATA FROM SSG/P0L FIELD EFFORT TPH-D AND TPH-G CONCENTRATIONS ARE LESS THAN SCREENING LEVELS.

LIMIT OF EXCAVATION FOR PRELIMINARY CLEAN-UP GOAL (DASHED WHERE APPROXIMATE)

CROSS SECTION



SA 003 FIGURE 2-7
SITE FEATURES MAP

LRA INITIAL PARCEL RECORD OF DECISION #1
FORMER McCLELLAN AIR FORCE BASE
SACRAMENTO, CALIFORNIA

SAC \\Yosemite\Groups\SACGIS \Mcafb_Arcview\Mc_sites.apr SA 003 04-08-2004

Soil Boring	Depth (feet bgs)	Lead Concentration (mg/kg)[a]	Barium Concentration (mg/kg)[b]
SA3HA001	1	46 / 20.1	282 / 93.8
	2.5	7.4	103
	4	20.5	351
SA3HA002	**1.25**	**184**	2150
	2.75	18 / 7.67	103 / 99.1
	4.5	12.1	125
SA3HA003	1.25	47.7	120
	2.75	5.02	28.1
	4.5	14	602
SA3HA004	**1.5**	**164**	296
	3	14.4	63.3
	4.5	6.79	96.5
SA3HA005	1.25	29.6	130
	3	3.01	75.7
	4.5	11.4	279
SA3HA006	0.25	87.5	628
	1.5	95.4	580
	3	18	120
IC03B013	1.8	18	69
	10	7	170
IC03B014	2.3	5.5	49
	5.2	NA	180
IC03B016	6.7	120	160
	12	6.4	91
IC03B017	2.8	7.6	100
	9	8.8 / 9.9	170 / 180
IC03B019	6.2	5.4	180
	14.1	NA	140
IC03S0001	0	42.3	76.4
IC03S0002	**0**	**452 / 564**	**2,800 / 4,580**
PL5EB005	18.2	9.3	320
	25.1	14	170
PL5EB006	9.7	4.7	170
	18	11	150
685-SB01[c]	1	120	140
	10	NA	NA
685-SB02[c]	6	NA	NA
685-SB03[c]	7	NA	NA

Bold Text - Exceeds preliminary cleanup goal
NA - Not Analyzed
ND - Not Detected
[a] - preliminary cleanup goal for lead in surface soil (0 to 1 foot bgs) is 137 mg/kg and in shallow soil (1 to 15 feet bgs) is 148 mg/kg

[b]- preliminary cleanup goal for barium in surface and shallow soil (0 to 15 feet bgs) is 2,400 mg/kg

[c]AFRPA data collected May 2003. Analytical results attached.

Soil Boring	Depth (feet bgs)	TPH-D Concentration (mg/kg)[a]	TPH-G Concentration (mg/kg)[b]
SA3SB001	14.75	ND	ND
	20	ND	ND
	24.5	ND	ND
	30.25	ND	ND
SA3SB002	23.75	ND	ND
	29	ND	NA
SA3SB003	14.25	ND	ND
	19.25	ND	ND
	24	ND	1.48J / 1.44J
	29.25	ND	ND
SA3SB004	**9**	**2,540J**	**13**
	13.5	7.2J	6.7J
	18.5	6.1J	6.2J
	23.25	4.2J	ND
SA3SB005	8.5	ND	ND
	13.5	ND	ND
	18.5	ND	ND
	23.5	ND	ND
SA3SB006	8.5	ND	ND
	13.5	ND	ND
	18.5	ND	ND
	23.5	ND	ND
IC03B016	6.7	19	NA
	19.1	20	NA
IC03B017	2.8	17	NA
	9	14	NA
	19.6	ND	NA
IC03B019	6.2	14	NA
	14.1	ND	NA
PL5EB005	16.2	ND	ND
	21.2	ND	ND
	29	ND	ND
PL5EB006	**9.1**	**10,000**	**29,000**
	15	ND	ND
	26.4	ND	ND
685-SB01[c]	1	NA	NA
	10	4	ND
685-SB02[c]	6	86	ND
685-SB03[c]	7	31	ND

Bold Text - Exceeds preliminary cleanup goal
NA - Not Analyzed
ND - Not Detected
[a] - lower preliminary cleanup goal for TPH-D is 100 mg/kg in surface and shallow soil. Upper preliminary cleanup goals for TPH D are 3,190 mg/kg in surface soil (0 to 1 foot bgs) and 3,900 mg/kg in shallow soil (1 to 15 feet bgs).
[b] - lower preliminary cleanup goal for TPH-G is 10 mg/kg in surface and shallow soil. Upper preliminary cleanup goals for TPH G are 160 mg/kg in surface soil (0 to 1 foot bgs) and 220 mg/kg in shallow soil (1 to 15 feet bgs).
[c]AFRPA data collected May 2003. Analytical results attached.

SA 003 FIGURE 2-8
DATA TABLES
LRA INITIAL PARCEL RECORD OF DECISION #1
FORMER McCLELLAN AIR FORCE BASE
SACRAMENTO, CALIFORNIA

During the Data Gap RI, six soil borings (SA3SB001 through SA3SB006) were drilled to 24 feet bgs and sampled to determine the lateral and vertical extent of subsurface soil TPH contamination reported near the IWL/IWL lift station (soil boring PL5EB006). The hand-auger borings were placed around RI boring IC03S002. TPH was detected as deep as 24-feet bgs, and only one sample (SA3SB0004) had TPH concentrations above the screening levels for the protection of surface water and groundwater.

Because of errors in soil boring placement and high TPH concentrations detected in soil boring PL5EB006, the lateral extent of TPH contamination was not fully determined. However, during the recent POL/SSG sampling effort, seven samples were collected from two borings between 1 and 40 feet bgs and analyzed for TPH-D and TPH-G to adequately characterize the lateral extent of TPH contamination. Concentrations of TPH-D did not exceed 100 mg/kg. All TPH-G results were non-detect.

In addition, three soil samples were collected in April 2003 and analyzed for TPH-D and TPH-G to better define the western extent of TPH contamination at SA 003. The concentrations of TPH-D and TPH-G were less than the screening levels for the protection of surface water and groundwater in all samples.

Metals. Soil samples collected adjacent to the hazardous waste storage area and washrack contained inorganic species exceeding background concentrations and screening levels for protection of human health and surface water. Inorganic concentrations did not exceed the screening levels for protection of groundwater. Overflow from the washrack and IWL lift station, and surface spills in and adjacent to the hazardous waste storage area are potential sources of inorganic contamination.

Lead, which was detected most frequently above background concentrations, exceeded screening levels for protection of human health and surface water, and is the primary non-VOC contaminant. Lead detected in one surface soil sample at 564 mg/kg, collected from soil boring IC03S0002, exceeded the "combined" background concentration of 74 mg/kg, and the screening levels for protection of human health of 148 mg/kg and surface water of 29 mg/kg. Of the 30 shallow soil samples collected below 1 foot bgs, the reported lead concentrations in 2 samples exceeded the screening level for protection of human health of 148 mg/kg and in 4 samples exceeded the "combined" background concentration. Lead concentrations did not exceed the screening level for protection of human health at depths below 1.5 feet bgs.

Barium and nickel were detected in a single surface sample above the "combined" background concentrations. Barium also exceeded the screening level for protection of human health. Although the nickel concentration was elevated, it did not exceed screening levels for protection of human health or the environment. The highest barium and nickel concentrations coincide with lead contamination and will be addressed as part of the remedial evaluation for lead contamination. Five other reported concentrations of barium exceeded the "combined" background concentration of 352 mg/kg, three of which were coincident with elevated lead concentrations.

Beryllium was detected above the "combined" background concentrations, but did not exceed screening levels for protection of human health or the environment. Manganese was detected above the "combined" background concentration in a single sample at

3,600 mg/kg versus 1,600 mg/kg at 12 feet bgs. This concentration exceeded the screening level for protection of human health. The maximum manganese concentration is coincident with barium at 620 mg/kg, which exceeds the background concentrations but is less than the screening levels. However, elevated barium and manganese concentrations were not detected in a sample collected at 6.3 feet bgs from the same boring (IC03B011). Finally, elevated beryllium and manganese concentrations do not coincide with lead or nickel contamination.

Chromium, copper, molybdenum, silver, vanadium, and zinc were detected in surface and shallow soil above "combined" background concentrations but did not exceed screening levels for protection of human health, surface water, or groundwater. Aluminum was detected below the "combined" background concentration but exceeded the screening level for protection of surface water. Iron was detected at the "combined" background concentration but exceeded the screening level for protection of human health and surface water.

Hexavalent chromium was detected in surface and shallow soil, at concentrations ranging from 0.19 to 7.95 mg/kg, at depths ranging from 0 to 1.5 feet bgs. Hexavalent chromium concentrations detected during the RI and Data Gap RI did not exceed screening levels for protection of human health, surface water, or groundwater. A hexavalent chromium concentration of 7.95 mg/kg was detected at soil boring SA3HA004 at 1.5 feet bgs. This location is approximately 12 feet northwest of the RI surface scrape IC03S0002, which contained hexavalent chromium at a concentration of 2.98 mg/kg. The total area impacted with hexavalent chromium has not been determined but appears coincident with the lead contamination. The target volume calculated for this site extends to a concrete-lined section of Magpie Creek and presumably includes the most northern extent of metals contamination at the site. Therefore, elevated concentrations of hexavalent chromium are likely within this target volume.

VOCs. During the RI, VOCs in soil gas were detected in two borings at depths from 21 to 62 feet bgs (Radian, 1995). No soil gas samples were collected from the 0 – 10 foot bgs soil interval. In recent soil gas samples from the POL/SSG sampling effort, VOCs were detected at concentrations greater than 1,000 ppbv at depths from 10 to 40 feet bgs (Phase 1 POL/SSG RICS Addenda, URS, 2003). In the 5 – 15 foot bgs soil interval, 16 soil gas samples from 5 boring locations were collected. VOC contamination at SA 003 will be addressed in the VOC FS Addendum and VOC ROD.

2.4.3.5 Contamination Exposure and Migration

Potential future exposure of residents or workers to contaminated soil is the most significant exposure pathway. VOC migration to indoor air is a potentially significant exposure pathway under some future land use scenarios. Potential exposure may also occur when shallow soils are brought to the surface by excavation, drilling, or construction while implementing the remedial action.

The likelihood of migration to other media is high. Based on analytical data reviewed during the Initial Parcel FS #1 evaluation, TPH constituents present a potential threat to groundwater, and lead presents a threat to surface water.

2.4.3.6 Current and Potential Future Site and Resource Uses

The predominant current land uses at McClellan include industrial, aviation, and residential. There are also some open areas present that are not currently used for any of these purposes. The site is vacant at this time, awaiting potential use by some future tenant through a lease arrangement with McClellan Park. In the future, SA 003 will likely be used for commercial/industrial or mixed-use purposes.

2.4.3.7 Human Health Risk Assessment

An human health risk assessment was prepared following the procedures described in the OU B RICS Addendum. However, the nature and extent of contamination in soil is not fully defined; therefore, the risk assessment is considered incomplete at this time. The adverse health effects posed by lead present at the site were evaluated separately using the California EPA lead exposure model, Version 7. The estimated blood-lead level at the 99th percentile for the child residential receptor is 7.6 µg/dL for lead concentrations in soil at 0 to 10 feet bgs. The estimated blood-lead level is below the target level of 10 µg/dL. The estimated blood-lead level at the 99th percentile for the child residential receptor is 17 µg/dL for lead concentrations in soil at 0 to 2 feet bgs. The estimated blood-lead level is above the target level of 10 µg/dL.

Basis for Action. Although the nature and extent of contamination is not fully defined and the risk assessment is incomplete, the known contaminant concentrations of metals, VOCs, and TPH exceeded the cleanup goals. TPH constituents present a potential threat to groundwater, and lead presents a threat to surface water. Therefore, the response action selected in this ROD is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances in the environment. At this site, TPH contamination is commingled with CERCLA contaminants; therefore, the site will be cleaned up under CERCLA.

2.4.4 SA 035

2.4.4.1 Site Overview and Features

SA 035 is located in IC 25 in northern OU A and includes Building 20 and the surrounding parking lot. The site covers approximately 20,000 square feet, or about one-half acre, including about 12,000 square feet covered by Building 20. From 1936 to 1960, was a quartermaster's warehouse. After 1966, it was a telecommunications coordination center. A solvent spill was reported to have occurred in 1989, but no details of the spill, quantities released, or location were documented (Jacobs, 2002). SVOCs, fuels, oils, and solvents were identified as materials used or handled at the site.

In 1942, a 2,500-gallon diesel UST was installed just west of the building to supply fuel to a back-up generator. Tank leak tests performed in 1986 and 1988 showed that no leaks were present. In 1992, the UST and associated contaminated soil were removed. Confirmation samples were collected from the tank excavation. No contamination was detected in the confirmation samples at detection limits of 5 mg/kg TPH-G, 10 mg/kg TPH-D, and 0.001 mg/kg benzene, toluene, ethylbenzene, and xylenes. Because of these results, no samples were collected at the immediate location of the UST during the RI and RWQCB accepted the UST closure (RWQCB, 1996). However, three screening-level shallow soil gas

samples and two soil samples were collected within 20 feet of the former UST location during the RI. Data from laboratory analyses of these samples are discussed in Section 2.4.4.4.

SA 035 is surrounded by SA 038 to the southeast, SA 049 to the west, and the northern section of SA 050 to the southwest. The site is adjacent to Building 21 to the east, which is not an IRP site, and Peacekeeper Way to the north.

2.4.4.2 Source of Contamination

The source of contamination is not known, and there are no documented details of the solvent spill that occurred. The primary contaminants for this ROD are metals and SVOCs, although VOCs were also detected.

Following is a list of documents, in chronological order, that were used to prepare this summary:

Jacobs. 2001. *Operable Unit A Remedial Investigation Characterization Summaries.* Final. September.

Text: Vol. 1, IC 25, pp. 1-28

Jacobs. 2002. *Operable Unit A Remedial Investigation Characterization Summaries Addendum.* Final. March.

Text: Vol. 1, SA35, pp. 1-18
Hits Table: Vol. 1, SA35, Attachment 1, pp. 1-8
All Data: Vol. 2, Appendix 1, SA35, pp. 7-12, 23-35
Human Health Risk Assessment Data: Vol. 3, Appendix 3, Section 1.3.1 pp. 1-9, Tables 1.3.1.10 to 1.3.1.16

CH2M HILL. 2003. *LRA Initial Parcel Feasibility Study #1.* August.

Risk Assessment (for SVOCs only): Vol. 2, Appendix G, pp. G2-11 – G2-16
Data Gaps Investigation Results, Vol. 2, Appendix E, pp. E2-6 – E2-8
Data Summary and ESF excerpts, Vol. 1, Appendix H, Section 6, pp. H6-1 – H6-7
Addendum documenting the December 2003 data from characterization and limited excavation activities performed by AFRPA (PENDING)

2.4.4.3 Sampling Strategy and Type of Contamination

During the UST removal conducted in 1992, confirmation soil samples were collected and analyzed for petroleum-related constituents. No contamination was detected. Soil gas and groundwater samples were collected around the exterior of Building 20 and analyzed for VOCs during the Phase 2 RI and Data Gap investigation conducted from 1996 to 1999. No samples were collected from beneath the building. VOCs, including halogenated VOCs, were detected. As part of the Site Closure Data Gaps Investigation performed from 2000 to 2001, soil samples were collected and analyzed for metals and SVOCs (OU A RICS Addendum, 2002). Bis(2-chloroethyl)ether (bis2CEE), in particular, was detected in the same sample as elevated concentrations of arsenic. Soil samples were also collected and analyzed for SVOCs during the Initial Parcel FS Data Gap Investigation conducted in 2002. Bis2CEE was not detected. Further characterization and limited excavation at the location of the

bis2CEE detection and elevated arsenic concentration were performed in December 2003 by AFRPA.

2.4.4.4 Location of Contamination

The following sections describe the lateral and vertical extent of contamination at SA 035. SVOCs and metals were the COC. However, several phases of RIs concluded that significant sources of contamination are not present at the site. Figure 2-9 identifies the site location and significant site features.

Metals. During the RI, six metals were identified at concentrations greater than the normal variance of background (arsenic, beryllium, barium, copper, lead, and zinc). Of these, only arsenic and barium were detected at concentrations greater than the "combined" background values. The maximum arsenic detection of 12.4 mg/kg was detected in soil boring SA35SB001 at 1 foot, and barium was detected at 374 mg/kg in soil boring SA35SB002 at 4 feet. The reported arsenic concentration exceeded the McClellan "combined" background concentration for arsenic of 5.8 mg/kg. However, a sample taken in the same boring at 3 feet bgs measured 3.2 mg/kg, well below the combined background concentration. The maximum reported arsenic concentration in soil boring SA35SB001 may be contamination. Although barium exceeded the "combined" background concentration of 352 mg/kg, it did not exceed screening levels for protection of human health and the environment.

Cadmium was detected at greater than the "combined" background concentration at SA35SB003 at 0.5 and 2 feet bgs; however, the reported concentrations of 2.2 and 2.3 mg/kg were less than the screening levels for protection of human health and the environment. Boring SA35SB003 is located west of Building 20, adjacent to the former UST, and approximately 100 feet south of the nearest boring, SA35SB001, as shown on Figure 2-9. Lead was detected at slightly elevated concentrations in the same samples at 41.8 and 51.7 mg/kg, respectively, but the concentrations were less than the "combined" background concentration. Given that the screening levels for protection of human health, groundwater, and surface water were not exceeded, cadmium and lead were not considered significant contaminants at the site.

Subsequent to completing the Initial Parcel FS #1 and at the request of the state, the Air Force performed a limited excavation of soil during additional characterization of the elevated arsenic detection at SA35SB001. This work was performed during December 2003 and is documented in an addendum to the Initial Parcel FS #1. Approximately 1.2 cubic yards of soil were removed at the location of the boring (SA35SB001). After the excavation, soil samples were collected and analyzed for arsenic using method SW7060 (and SVOCs as discussed in the following subsection). A composite sample was collected from the four sidewalls at 1 foot bgs, and a discrete sample and field duplicate were collected from the center of the excavation floor. The arsenic concentrations in the composite sidewall sample was 4.6 mg/kg and the field duplicate of the discrete excavation was floor sample 3.5 mg/kg. Both were less than the "combined" background concentration for arsenic 4.9 mg/kg. The only concentration that exceeded the "combined" background concentration was a 7.3 mg/kg result from the primary excavation floor sample. These recent data suggest that arsenic concentrations at the site are similar to or only slightly greater than those of background.

SVOCs. SVOCs were reported in SA35SB001 (0.5 feet bgs) and included bis2CEE at 0.462 mg/kg, DEPH at 0.145 mg/kg, and benzoic acid at 0.228 mg/kg. The location of this boring is shown on Figure 2-9 and is approximately 10 feet north of the northwest corner of Building 20. The bis2CEE detection exceeds the cleanup goal for the protection of human health. No SVOCs were detected in a sample collected at 2 feet bgs in this boring. In SA35SB003, DEPH was reported in surface and 3.5 foot bgs samples at concentrations of 0.167 mg/kg and 0.196 g/kg, respectively. Both of these results were reported as trace and estimated concentrations. SA35SB003 was located adjacent to the former UST.

Because the bis2CEE detection exceeded its preliminary remediation goal during the site closure data gap sampling effort, it was identified as a data gap and was addressed in the Initial Parcel Data Gaps Investigation. A source for the bis2CEE is not known at this site. Four samples were collected at three locations in a triangular pattern approximately 15 feet away from the previous boring (SA35SB001). The samples were collected between 1 and 2 feet bgs. Bis2CEE was not detected in any of the samples; however, bis(2-ethylhexyl)phthalate was identified at a J-flagged concentration of 0.0657 mg/kg. This detection is likely the result of laboratory contamination and not a site contaminant. Although the extent of bis2CEE is limited, it was identified as a COC at the site because the previously reported concentration significantly exceeds the cleanup goal for protection of human health.

As stated above, the Air Force performed a limited soil excavation during additional characterization of the bis2CEE detection at SA35SB001. No SVOCs were detected in the three soil samples collected from the excavation sidewall and floor. In addition, no SVOCs were detected in the sample of excavated soil prior to its disposal.

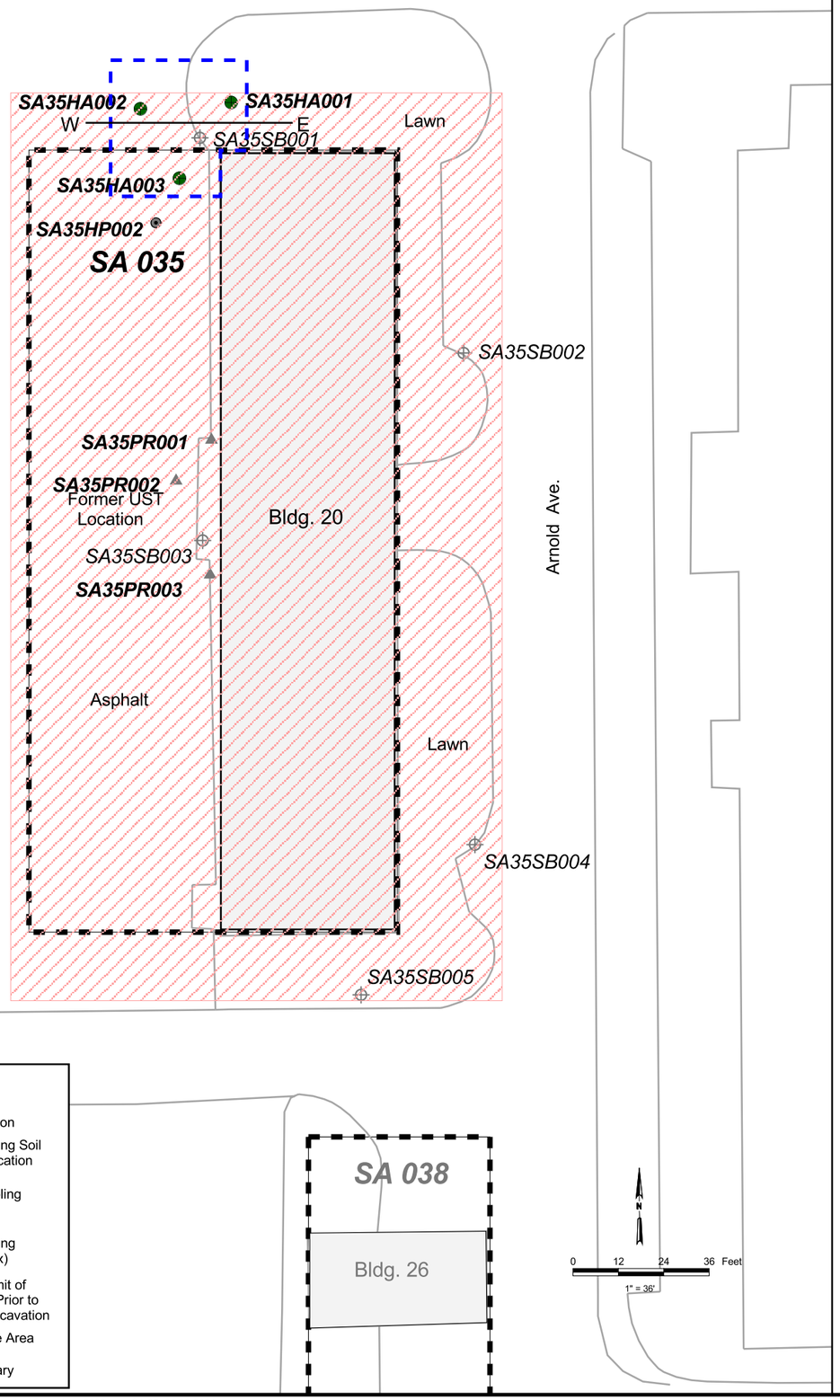
VOCs. Shallow soil gas samples were collected at three locations adjacent to the former UST located west of the building. The samples were collected at depths ranging from 6.3 to 7 feet bgs. Only one detection of a VOC was reported, acetone at 750 ppbv from SA35PR001. TCE at 1,300 ppbv and propane at 1,800 ppbv were detected at a depth of 81 feet bgs in soil gas samples. These contaminants are most likely attributed to contaminant off-gassing from groundwater at 120 feet bgs or smear zone contamination (Jacobs, 2001). VOCs were also detected in groundwater. Carbon tetrachloride was detected up to 19 µg/L, and TCE was detected up to 15 µg/L. TCE and carbon tetrachloride may be from an upgradient source (Jacobs, 2001). VOCs will be addressed in the VOC FS Addendum and VOC ROD.

2.4.4.5 Contamination Exposure and Migration

Potential future exposure of residents or workers to near-surface contaminated soil has been significantly reduced at this site through limited soil removal during the additional site characterization sampling during December 2003. As a result, at this site no threats to human health, groundwater, or surface water remain.

2.4.4.6 Current and Potential Future Site and Resource Uses

The predominant current land uses at McClellan include industrial, aviation, and residential. Some open areas are also present that are not currently used for any of these purposes. The site is occupied at this time by a lease tenant (Surewest Communications).



SELECTED CONTAMINANT CONCENTRATIONS [c]

Soil Boring	Depth (feet bgs)	Arsenic (mg/kg)[a]	bis(2-chloroethyl) ether (mg/kg)[b]
SA35HA001	1.25	NA	ND
SA35HA001	2.25	NA	ND
SA35HA002	1.25	NA	ND
SA35HA003	3.75	NA	ND
SA35SB001	1	**12.4**	**0.462**
SA35SB001	3	3.2	ND
SA35SB002	1.5	2.3	ND
SA35SB002	4	2.3	ND
SA35SB003	0.75	2.8	ND
SA35SB003	2.25	1.6	ND
SA35SB004	1.5	1.1	ND
SA35SB004	4	1.1	ND
SA35SB005	1.5	1.5	ND
SA35SB005	3.5	1.7	ND

Bold Text- exceeds preliminary cleanup goal.

[a] Preliminary cleanup goal for arsenic is 6.5 mg/kg in shallow soil and 2.8 mg/kg in surface soil.

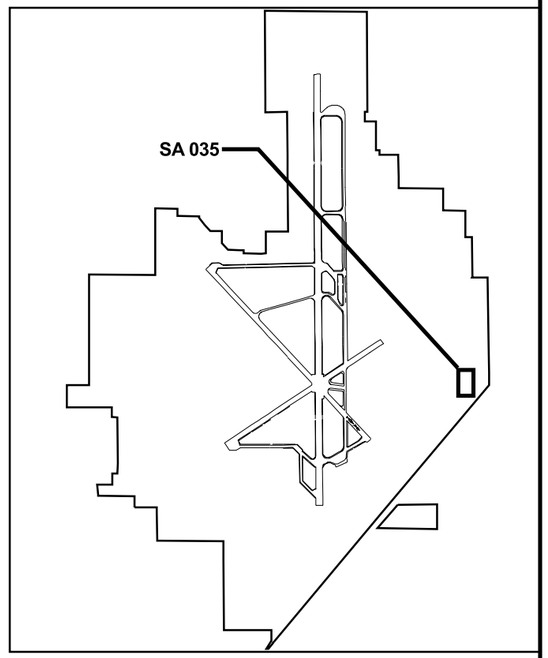
[b] Preliminary cleanup goal for bis(2-chloroethyl) ether is 0.00030 mg/kg in surface and shallow soil.

[c] Data collected prior to the 2003 characterization and limited excavation.

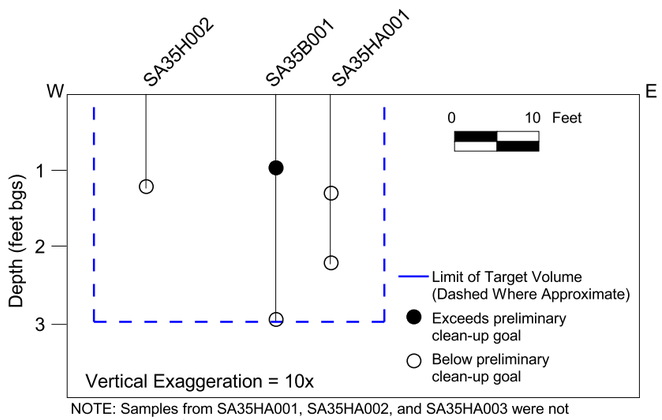
NA = Not Analyzed

ND = Not Detected

KEY MAP



CROSS SECTION



NOTE: Samples from SA35HA001, SA35HA002, and SA35HA003 were not analyzed for arsenic.

SA 035 FIGURE 2-9
SITE FEATURES MAP
LRA INITIAL PARCEL RECORD OF DECISION #1
FORMER McCLELLAN AIR FORCE BASE
SACRAMENTO, CALIFORNIA

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In the future, SA 035 will likely continue to be used for commercial/industrial or mixed-use purposes. However, various scenarios were evaluated in the human health risk assessment, including the residential scenarios, to provide information to evaluate the range of potential uses for the site and to make future risk-management decisions.

2.4.4.7 Human Health Risk Assessment

The results of the baseline risk assessment for SA 035 are provided in Section A3 of Appendix A,. The risk assessment is as presented in the OU A RICS Addenda except that the SVOC data from the RI and 2002 Data Gaps investigation were combined and associated risks were recalculated as documented in Appendix G of the Initial Parcel FS #1. Risks were not recalculated after the additional characterization activities and limited excavation performed during 2003 (Addendum to Initial Parcel FS #1, April 2004).

Both residential and occupational exposure scenarios were evaluated for SA 035. The risk results for these scenarios are summarized below and presented in the text and risk summary tables of Appendix A.

Risk Characterization. Prior to the limited excavation, the potential cancer risks for SA 035 were as follows:

- Future adult resident (0 to 2 feet bgs depth interval): 2×10^{-3}
- Future adult resident (0 to 10 feet bgs depth interval): 5×10^{-4}
- Future adult resident (0 to 2 feet bgs depth interval) and groundwater: 2×10^{-3}
- Future adult resident (0 to 10 feet bgs depth interval) and groundwater: 5×10^{-4}
- Outdoor Occupational Worker: 5×10^{-6}
- Indoor Occupational Worker: 2×10^{-7}
- Future Construction Worker: 1×10^{-6}

The risk estimates for the residential scenarios exceed EPA's risk management range. The primary contributor to the potential cancer risks is the homegrown produce pathway for bis2CEE. The risk estimates for the worker scenarios, however, are within or below EPA's risk management range.

Prior to the limited excavation, the potential noncancer risks were as follows:

- Future adult resident (0 to 2 feet bgs depth interval): <1
- Future adult resident (0 to 10 feet bgs depth interval): <1
- Future child resident (0 to 2 feet bgs depth interval): 2
- Future child resident (0 to 10 feet bgs depth interval): 1
- Future adult resident (0 to 2 feet bgs depth interval) and groundwater: 2
- Future adult resident (0 to 10 feet bgs depth interval) and groundwater: 1
- Future child resident (0 to 2 feet bgs depth interval) and groundwater: 4
- Future child resident (0 to 10 feet bgs depth interval) and groundwater: 4
- Outdoor occupational worker:<1
- Indoor occupational worker: <1
- Future construction worker: <1

The main contributors to the hazard indices for the residential scenarios are VOCs in groundwater and arsenic in soil through the homegrown produce pathway. For the worker scenarios, the hazard indices are less than 1 indicating that the potential for adverse noncancer health effects for those receptors are unlikely.

Based on the risk assessment, the potential cancer risk from groundwater exposure for future adult residents is 5.0×10^{-5}. The main contributors to the potential cancer risk are carbon tetrachloride and TCE. For groundwater, the noncancer hazard index for the future adult resident is 1.0 and the hazard index for the future child resident is 2.0. The main contributors to the hazard indices are carbon tetrachloride and TCE.

Uncertainties. There are uncertainties associated with the risk estimates for SA 035. These are listed briefly below with additional discussion provided in Section A3 of Appendix A:

- Future re-use plans for this site are indefinite, but do not include residential use.
- The partition coefficients used to estimate potential risks from the homegrown produce pathway are uncertain.
- Because bis(2-chloroethyl)ether was considered a non-VOC for the Initial Parcel FS human health risk assessment, the risk estimates do not include the indoor or ambient air pathways. (See Appendix A, Section A3.5 for further discussion of bis(2-chloroethyl)ether as a non-VOC.)
- The majority of the adult carcinogenic risk is attributed to bis2CEE which was only detected in one sample. This location was subsequently excavated so current risks are likely to be significantly lower.
- Toxicity criteria for some VOCs and arsenic have changed since the human health risk assessment was conducted. (See Appendix A, Section A3.5 for a discussion of specific toxicity criteria changes.)

Basis for No Action. Potential future exposure of residents or workers to near-surface contaminated soil has been addressed at this site through limited soil removal during the additional site characterization. Results are now non-detect for the organic bis2CEE, and arsenic levels are at background. As a result, at this site no threats to human health or the environment remain. Therefore, no action is necessary at this site.

2.4.5 SA 041

2.4.5.1 Site Overview and Features

SA 041 is in the central portion of IC 26, which is in the northeastern portion of OU A. It includes Building 54, which consisted of a welding and sheet-metal fabrication shop in the western half of the building, and a carpentry shop in the eastern half of the building. The shops were in operation from 1944 to 1990. Thereafter, an Employee Relations office occupied Building 54. The building covers the majority of the site, and the total site area is approximately 28,000 square feet.

Activities in the building involved minimal use of hazardous materials. Specific chemicals handled at the site included a variety of solvents, adhesives, fuels, and oils. Wastes

generated by the operations in the building were taken to a hazardous waste storage area directly north of the building until pick up and final disposal.

SA 041 is surrounded by PRL S-014 to the north, SA 034 to the east, and SA 040 to the south. The site is adjacent to Building 21 to the west, which is not an IRP site. The site is not under the influence of any soil vapor extraction system.

2.4.5.2 Source of Contamination

Suspected sources of contamination were not identified because the building has a concrete floor with no drains and no visual evidence of contamination was noted. The building slab is also surrounded by asphalt and concrete (Jacobs, 2001), and based on aerial photos from 1946 to the present, this area has been covered with buildings and asphalt paving. During the RI, low levels of VOCs were identified.

Following is a list of documents, in chronological order, that were used to prepare this summary:

1992, *IRP OUA Remedial Investigation Sampling and Analysis Plan, Section 3 Field Sampling Plan (FSP)*, Volume 2, pp. SA41-1-2.

Jacobs, 1995. *RI, Interim Basewide Final Report, Site Characterization Summary (SCS) and Field Sampling Plan, Part 2A, Operable Unit A, IC 26*. November.

Jacobs, 2001. *Interim Basewide Remedial Investigation Report Final Part 2A-Remedial Investigation Characterization Summaries*. September. Text: Vol. 1 IC 26 pp. 1-28.

URS, 2003, Quarterly Vadose Zone Monitoring Report, October – December 2002, February.

Jacobs. 2002. *Operable Unit A Remedial Investigation Characterization Summaries Addendum.* Final. March. CH2M HILL. 2003. *LRA Initial Parcel Feasibility Study #1*. August. Data Summary and ESF excerpts, Vol. 1, Appendix H, Section 7, pp. H7-1 – H7-4

2.4.5.3 Sampling Strategy and Type of Contamination

During the Phase 1 RI, shallow screening soil gas samples were collected at eight locations around the perimeter of Building 54 during 1992. Samples were analyzed for VOCs. No soil samples were collected.

2.4.5.4 Location of Contamination

The following sections describe the lateral and vertical extent of contamination at SA 041. No primary contaminants were identified. Figure 2-10 identifies the site location and significant site features. Results from six of the eight soil gas samples collected at depths of 3 to 5 feet bgs reported low levels of aromatic VOCs, up to 950 ppbv. A Method TO-14 sample collected at SA41SG01 confirmed the presence of low levels of halogenated VOCs (primarily, carbon tetrachloride and Freon constituents) ranging in concentration from 6.6 to 78 ppbv (SCS and FSP, Jacobs, 1995b). Due to these low levels of VOCs, further soil sampling was not conducted. Based on the OU A RI SAP, soil samples were collected only if a known or suspected release location was identified (OU A RI SAP, 1992). Because the building has a concrete floor with no drains, visual evidence of contamination was not noted, and paving surrounds the building except for a 3-foot-wide strip of exposed soil

along the east side of the building, suspected sources or potential contaminant pathways were not identified and no soil samples were collected (SCS and FSP, Jacobs, 1995b). Also, based on the most recent vadose zone quarterly monitoring report (URS, 2003), there appears to be no source of soil gas contamination in the vicinity of SA 041. VOC issues are being addressed in the VOC FS Addendum and VOC ROD.

2.4.5.5 Contamination Exposure and Migration

There were no COC identified for this site. Therefore, exposure pathways were not predicted and migration of contamination is not expected.

2.4.5.6 Current and Potential Future Site and Resource Uses

The predominant current land uses at McClellan include industrial, aviation, and residential. Some open areas are also present that are not currently used for any of these purposes. The site is currently vacant, awaiting reuse by a future tenant through a lease arrangement with McClellan Park. In the future, SA 041 will likely be used for commercial/ industrial or mixed-use purposes.

2.4.5.7 Human Health Risk Assessment

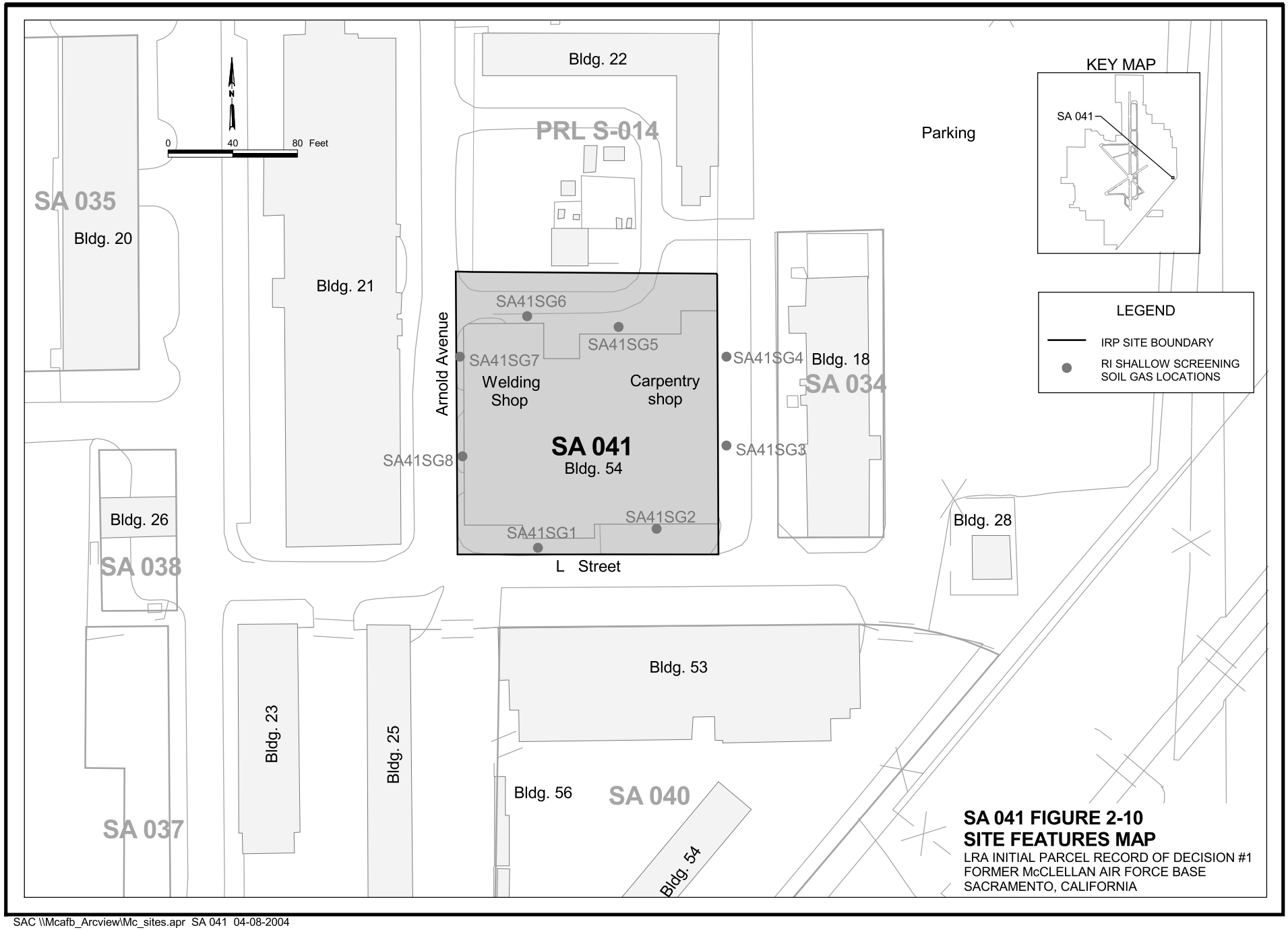
According to the OU A RICS, site investigations revealed that activities within the building involved minimal use of hazardous materials. In addition, potential contaminant pathways were not identified because the building had concrete floors with no drains, and there was no visual evidence of contamination noted. There was also no exposed soil present around the building with the exception of a narrow 3-foot-wide strip along the east side of the building. Therefore, soil and groundwater sampling was not deemed necessary for the site. However, shallow screening soil gas samples were collected around the perimeter of the building. Confirmed analytes were not reported at concentrations greater than 500 ppbv. Because shallow soil gas samples did not exceed 500 ppbv and soil sampling was determined to not be necessary, contaminants of potential concern were not selected during the screening level human health risk assessment (SCS and FSP, Jacobs, 1995), which did not include the indoor air pathway. Therefore, a human health risk assessment was not performed for the site.

Basis for No Action. Soil gas screening found only low levels of VOCs; therefore, no soil samples were collected. Excess risks at SA 041 are not expected since no COC were identified during the screening level risk assessment and there were no known or suspected sources of contamination. There are no threats to surface water or groundwater quality. Therefore, no action is necessary at this site to address non-VOC contaminants. VOC contaminants will be addressed in subsequent RODs.

2.4.6 SA 091

2.4.6.1 Site Overview and Features

SA 091 is in southern OU A in IC 43 and consists of the former warehouse Building 621 (Bays A through D) and an associated open storage lot to the east. The site is approximately 10 acres. The former warehouse covered more than half of the site. The site also included a paved 4.5-acre open storage area east of the building that still exists. The building was



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constructed about 1946 and served as general warehousing until it was likely remodeled in 1981. Bay A then became a designated hazardous materials storage area and the remaining bays were used to receive and store non-hazardous materials. A variety of solvents, acids, bases, paints, electrical transformers, and compressed gases were stored at the site. Materials were generally stored on pallets, and any leaking or damaged containers were stored in a bermed staging area in Bay A until released for offbase disposal. A solvent spill was reported west of Bay C in 1988. Records indicate that the spill was investigation and contaminated soil (approximately 16 cubic yards) was subsequently removed.

In a 1953 photograph, the open storage lot appears to be paved. The entire area of the site surrounding the building has been covered by pavement since at least 1953. Records indicate that PCB transformers and transformer oil were handled and stored in this area, and spills or leaks were likely to have occurred. The site was active until approximately 1994, at which time Building 621 was demolished and only the foundation remained.

SA 091 is surrounded by confirmed site (CS) 024 to the east, SA 088 to the northeast, and SA 104 to the north. The site is bounded to the south by the base property line.

2.4.6.2 Source of Contamination

The primary source of contamination is likely spills from materials stored in the open storage area. During the RI, pesticides were identified in this area. Another potential source of contamination was the spill west of Bay C. However, records indicate that a removal action was conducted and the contamination was removed.

Following is a list of documents, in chronological order, that were used to prepare this summary:

Jacobs. 1995, Final Part 2A: OUA Site Characterization Summary/FSP for IC 43, Section IC 43, pps. 1 through 56, and Appendix C.

Jacobs. 2001. *Operable Unit A Remedial Investigation Characterization Summaries*. Final. December.

Text: Vol. 3, IC 43, pp. 1-48
Hits Table: Vol. 3, IC 43, Attachment 1, pp. 1-30
All Data: Vol. 9, Appendix A1, SA91, pp. 4-6, 8-25CH2M HILL. 2003. *Initial Parcel Feasibility Study #1.* Final. August.

Risk Assessment (for pesticides only): Vol. 2, Appendix G, pp. G2-17 – G2-21
Data Gaps Investigation Results, Vol. 2, Appendix E, pp. E2-18 – E2-21
Data Summary and ESF excerpts, Vol. 1, Appendix H, Section 2, pp. H8-1 – H8-7

2.4.6.3 Sampling Strategy and Type of Contamination

In 1988, soil samples were collected during a solvent spill investigation west of Bay C at Building 621. Samples were analyzed for VOCs, SVOCs, PCBs, and metals. Soil gas and soil samples were collected and analyzed for TPH, pesticides, PCBs, and VOCs (soil gas samples only) during the Phase 1 RI. Only soil gas samples were collected around Building 621 to determine the need for further soil sampling. In the open storage area, sampling and analysis were tailored to uses identified during interviews and as described in

Section 2.4.6.1. As a part of the Initial Parcel FS Data Gap investigation conducted in 2002, shallow soil samples were collected and analyzed for pesticides to bound previously reported detections identified during the RI.

2.4.6.4 Location of Contamination

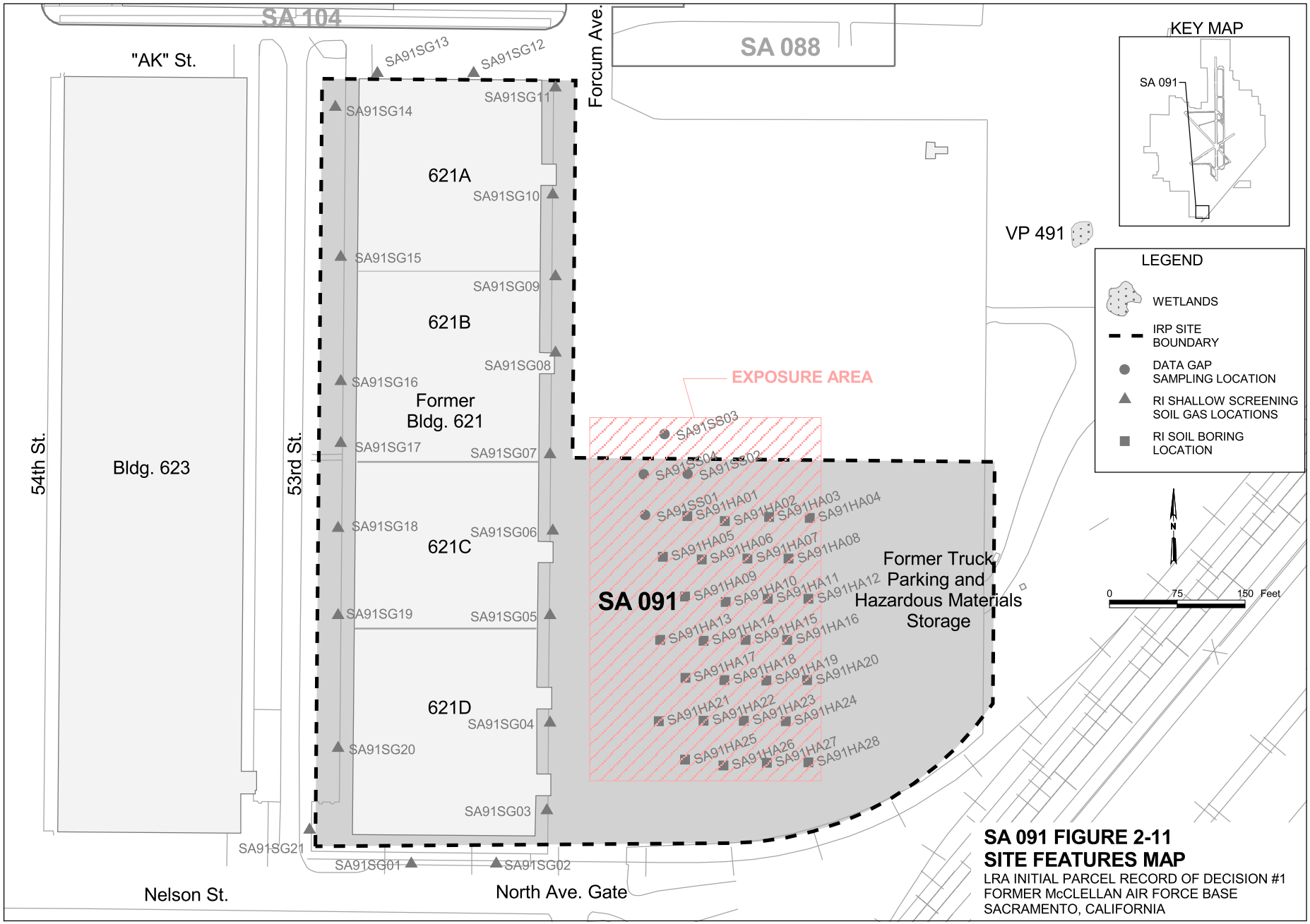
The following sections describe the lateral and vertical extent of contamination at SA 091. TPH, pesticides, PCBs, and VOCs were identified. However, several phases of RIs concluded that significant contamination is not present at the site. Figure 2-11 identifies the site location and significant site features.

Total Petroleum Hydrocarbons. TPH-D was reported from hand-auger borings drilled in the open storage lot. The highest reported detection was 76 mg/kg from SA91HA011. Most reported detections were in the surface sample at 0.25 foot bgs and were typically not detected at the 2.5-foot bgs sample. No detections were reported from the 5-foot bgs sample depth. The extent of TPH-D detections appears to be limited to the central part of the sampled area.

Pesticides. Based on the RI data, pesticides were reported sporadically across the site. Most detections were very low and ranged in concentration from 0.001 to 0.029 mg/kg. These concentrations were often qualified as tentatively identified and estimated. One sample location, however, contained a slightly elevated detection of two compounds. DDT44 and DDE44 concentrations of 0.34 mg/kg and 0.47 mg/kg, respectively, were reported in the sample from SA91HA001 at a depth of 2.5 feet. In this boring, there were no detections at the surface and 5-foot bgs samples. This location, the northwestern-most sample location, was not bounded laterally, and a data gap existed.

Step-out sampling, as part of the Data Gaps Investigation for the Initial Parcel FS, was conducted to define the lateral extent of pesticide contamination found in soil boring SA91HA001. Shallow hand-auger borings were drilled at grid locations spaced at approximately 50-foot intervals. Samples were collected at 0 to 0.5 foot and at 2 feet. Results of this sampling contained similar compounds reported in boring SA91HA001 during the RI. These included detections of DDE44 and DDT44. Concentrations were very low when compared to the slightly elevated hits detected in the RI and, with one exception, were all J-flagged as estimated. The maximum reported DDE44 detection was 0.0057 J mg/kg. The maximum reported DDT44 was 0.0192 mg/kg. A detection of DDD44 was also reported from one sample at 0.001 J mg/kg. Based on this sampling event, the previously elevated detections from the RI were successfully bounded.

Polychlorinated Biphenyls. Based on interview records, the parking area was a known PCB transformer storage location with potential spill and leak occurrences; therefore, soil samples were collected and analyzed for PCB contamination in this area. According to the RI data, 76 samples from 28 locations were collected from hand-auger borings drilled in the adjacent open storage lot and analyzed for PCBs using method SW8080. The method detection limits ranged from 0.03 mg/kg to 3 mg/kg with method detection limits for 89 percent of the PCB analyses less than the screening level of 0.063 mg/kg. There were no PCB contaminants detected. The elevated method detection limits were reported in seven



SA 091 FIGURE 2-11
SITE FEATURES MAP
LRA INITIAL PARCEL RECORD OF DECISION #1
FORMER McCLELLAN AIR FORCE BASE
SACRAMENTO, CALIFORNIA

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samples, of which only one had a detection of TPH-D and two others had detections of pesticides. Six of the seven samples were from three adjacent borings. The reason for the elevated method detection limits is not known, nor is the relative location of these samples to the reported transformer storage. Samples were collected at 32 locations (28 locations during the RI and 4 locations during the 2002 data gaps investigation) in a grid pattern within the open storage area on 50 foot centers. The four locations with elevated method detection limits represent approximately 13% of the open storage area.

VOCs. Based on the RI data, VOC contamination was detected in 20 shallow soil gas samples collected around Building 621. Analytical results from the soil gas samples indicated that all constituents detected were less than 100 ppbv. PCE and 1,1,1-TCA were the primary contaminants detected at approximately 1 ppbv. However, the presence of PCE and 1,1,1-TCA was not confirmed during confirmation analysis performed at the same time. Only low levels, less than 100 ppbv, of acetone, a common laboratory contaminant, were detected in the confirmation samples. Based on this information and according to the Phase 1 Data Quality Objectives, further soil samples were not collected around Building 621 because no individual constituent in the soil gas was above 500 ppbv. With the exception of one solvent spill that was remediated, there is no specific knowledge of a VOC source.

SA 091 is above a groundwater plume primarily contaminated with TCE. Contamination is most likely a result of groundwater contamination migrating from CS 024, which is to the east of SA 091. VOC issues will be addressed in the VOC FS Addendum and VOC ROD.

2.4.6.5 Contamination Exposure and Migration

Potential future exposure of residents or workers to contaminated soil is the most significant and likely exposure pathway at SA 091. Potential exposure is likely to occur when shallow soils are brought to the surface by excavation, drilling, or construction. Migration is not expected because there are no significant levels of non-VOC contaminants present at the site. In addition, the low levels of non-VOC contaminants at the site do not present a threat to surface water or groundwater quality.

2.4.6.6 Current and Potential Future Site and Resource Uses

The predominant current land uses at McClellan include industrial, aviation, and residential. Some open areas are also present that are not currently used for any of these purposes. The site is vacant at this time, the former foundation of Building 621 has been demolished and the site is awaiting redevelopment by some future tenant through a lease arrangement with McClellan Park.

In the future, SA 091 will likely be used for commercial/industrial or mixed-use purposes. A business park has been scheduled for development at this location. However in the Initial Parcel FS #1, various scenarios were evaluated in the human health risk assessment, including the residential scenarios, to provide information to evaluate the range of potential uses for the site and to make future risk-management decisions.

2.4.6.7 Human Health Risk Assessment

For soil, the results of the baseline risk assessment for SA 091 are provided in Section A4 of Appendix A. The risk assessment is also documented in Appendix G of the Initial Parcel

FS #1. For groundwater, a screening-level assessment of potential risks was performed for the ROD and is summarized here.

Both residential and occupational exposure scenarios were evaluated for SA 091. The risk results for these scenarios are summarized below and presented in the text and risk summary tables of Appendix A.

Risk Characterization. The potential cancer risks for SA 091 based on soil exposure only are as follows:

- Future adult resident (0 to 2 feet bgs depth interval): 7×10^{-9}
- Future adult resident (0 to 10 feet bgs depth interval): 6×10^{-8}
- Outdoor occupational worker: 4×10^{-10}
- Future construction worker: 1×10^{-9}

The risk estimates for the residential scenarios and worker scenarios for soil exposure are below EPA's risk management range. In addition, the noncancer hazard indices are less than 1 for the scenarios evaluated for soil exposure indicating that the potential for adverse non-cancer health effects is unlikely.

For the screening-level groundwater evaluation, the potential cancer risk for future adult residents is 2×10^{-4}. The main contributors to the potential cancer risk are arsenic and TCE. For groundwater, the noncancer hazard index for the future adult resident is 10 and the hazard index for the future child resident is 20. The main contributor to the hazard indices is TCE.

Uncertainties. There are uncertainties associated with the risk estimates for SA 091. These are listed briefly below with additional discussion provided in Section A4 of Appendix A:

- Groundwater underlying this site has likely been affected by an upgradient source; therefore, site-related risks specific to SA 091 associated with exposure to groundwater could not be evaluated.
- Current re-use plans for the site are indefinite, but do not include residential use.
- Only limited samples from the site were analyzed for SVOCs and metals. These samples were collected outside of the exposure area as discussed in Section 2.4.6.3. None of the samples collected from the open storage and truck parking area were analyzed for PAHs or metals.

Basis for No Action. The risk estimates for SA 091 soil are below the EPA's target risk management range of 10^{-4} and 10^{-6}, and no threats to groundwater or surface-water quality are present. Therefore, no action is warranted at this site.

2.4.7 Summary of Potential Impacts to Groundwater and Surface Water

Potential impacts to water quality have been identified at two of the six CERCLA contaminated ROD sites: PRL S-014 and SA 003.

At PRL S-014, concentrations of the non-VOC contaminant of concern, PCB-1260, in shallow soil exceed the cleanup level for the protection of surface water. Therefore, impacts to

surface water are possible. However, the maximum concentration of PCB-1260 does not exceed the cleanup goal for the protection groundwater. Thus, there were no potential impacts to groundwater identified at this site.

At SA 003, concentrations of lead, TPH-D, and TPH-G exceed their respective cleanup levels for the protection of surface water. Therefore, non-VOC contamination at this site may impact surface-water quality. In addition, concentrations of TPH-G and TPH-D exceed cleanup levels for the protection of groundwater. Therefore, impacts to groundwater are possible. Metals contamination in soil is commingled with the fuels-related contamination at this site. Because maximum contaminant concentrations were less than cleanup goals, impacts to surface-water and groundwater quality were not identified at the remaining four sites.

2.5 Remedial Action Objectives

RAOs for McClellan are statements developed by AFRPA and the regulatory agencies that define the extent to which the sites will require cleanup to meet the objectives of protecting human health and the environment. These RAOs reflect the non-VOC COC, exposure routes and receptors, and acceptable contaminant concentrations or range of concentrations for soil. Additional RAOs describe goals for the remedial action related to land use, coordination of remedial programs, and use of innovative technology. The RAOs for non-VOCs in soil within the Initial Parcel sites at McClellan include the following:

- Prevent and reduce to acceptable levels human exposure to soil contaminants.
- Prevent or reduce to acceptable levels the impact to groundwater and surface water.
- Reduce risks to ecological receptors to a level consistent with habitat quality.
- Achieve compatibility with other remedial actions at McClellan (i.e., actions to address VOC contamination).
- Reduce the volume of contaminated soil.
- Protect surface-water and groundwater quality.
- Maximize, to the extent practicable, the amount of land available for unrestricted use, and where not possible, to the land's best use.
- Restore cleaned areas to a condition compatible with the existing surrounding environment and land use.
- Expedite site cleanup and restoration.
- Consider innovative technologies to reduce the length and cost of cleanup actions.

An excess lifetime cancer risk of 1×10^{-6} and a non-cancer HQ of 1.0 for each contaminant were used to calculate cleanup goals for protection of human health for an unrestricted land

Note: The Draft Final Initial Parcel ROD #1 included the following RAO: "Achieve lowest cleanup levels that are technically and economically feasible." The Air Force removed this RAO from the Final version of the ROD. The Air Force believes that this RAO is not relevant to the selected remedies in this ROD. The State disagrees with the removal of this RAO, however, the State will not dispute the removal of this RAO in this ROD, as the State believes the deleted RAO will be satisfied by the cleanup levels designed to protect human health.

use scenario. The first RAO listed above is achieved if individual contaminant concentrations are less than or equal to these cleanup goals.

2.6 Description of Alternatives

Representative process options were screened and assembled into nine remedial alternatives that address a broad range of site conditions and non-VOC contaminants in soil at the sites within the Initial Parcel. The assembled alternatives include the following:

- Alternative 1 – No Action (Unrestricted Land Use)
- Alternative 2 – Institutional Controls Only (Restricted Land Use)
- Alternative 3A – Excavation/Landfill (Unrestricted Land Use)
- Alternative 3B – Excavation/Landfill (Restricted Land Use)
- Alternative 4A – Bioventing (Unrestricted Land Use)
- Alternative 4B – Bioventing (Restricted Land Use)
- Alternative 5 – Excavation/Treatment/Backfill (Unrestricted Land Use)
- Alternative 6 – Multilayer Cap (Restricted Land Use)
- Alternative 7 – Excavation/Corrective Action Management Unit (CAMU) (Restricted Land Use)

Alternatives 6 and 7 were screened out prior to the detailed analysis of alternatives in the Initial Parcel FS. These alternatives were screened out because both have a moderate to high capital cost and will require long-term institutional controls to ensure that the cap or cover remains protective. Additionally, future land use at the CAMU or capped areas will be permanently restricted to activities that will not damage the cover or cap and create exposure pathways.

Alternatives 4A and 4B are appropriate for sites contaminated with only fuel-related contaminants. Sites with only fuel-related contaminants are handled under State requirements. Under CERCLA, *no action* would be considered for this site.

2.6.1 Alternative 1 – No Action (Unrestricted Land Use)

In accordance with the NCP, the No Action alternative was evaluated to establish a basis for comparison with other alternatives. No remedial activities will take place under this alternative; therefore, contamination is not reduced. Under this alternative, the Air Force would take no further action to address soil contamination problems or to minimize further contaminant releases from the sites. Any reduction in contaminant concentrations would be a result of natural degradation.

2.6.2 Alternative 2 – Institutional Controls (Restricted Land Use)

No active remediation would be conducted under this alternative. Instead, institutional controls will be implemented to eliminate or limit exposure pathways to human receptors through non-engineering methods. This alternative results in restricted land use. No remediation of soil is required to support industrial or other mixed land uses. If excavation and other site work are necessary, environmental and worker safety control measures will be implemented.

Institutional control measures such as permit programs, proper zoning, monitoring, and enforcement will be used to maintain site security, control potential contaminant migration and exposure, and limit land use. The institutional controls will "run with the land" in perpetuity and will provide adequate protection as long as they are monitored and enforced.

Implementation of institutional controls will require participation from three parties: AFRPA, Sacramento County, and the State. Each party has the responsibility for implementing specific institutional controls as summarized below. In addition, Alternative 2 includes monitoring and enforcement of the institutional controls by each of the three parties and the EPA.

- Part 2A – Institutional Controls Implemented by AFRPA
  - Environmental encroachment permits
  - Deed covenants
  - Deed notices
  - Advisories

Where protection of human health and the environment requires restriction of the use of the land or groundwater, institutional controls are designed to prevent unauthorized use. Where property is to be transferred by the Air Force, the key institutional control elements include the following:

- Each federal deed or letter of transfer to another federal agency will include a description of the residual contamination on the property and the selected restrictions. The institutional controls, in the form of deed restrictions are "environmental restrictions" under California Civil Code Section 1471, which will run with the land.

- The Air Force will conduct annual monitoring and undertake prompt action to address activity that is inconsistent with the institutional control objective or use restrictions, exposure assumptions, or any action that may interfere with the effectiveness of the institutional controls. The Air Force will submit to the regulatory agencies an annual monitoring report on the status of the institutional controls and how any institutional control deficiencies or inconsistent uses have been addressed. The institutional control monitoring reports will not be subject to approval and/or revision by the regulatory agencies. The annual monitoring reports will be used as part of the Five Year Review to evaluate the effectiveness of the remedy.

- The Air Force will notify EPA and the State via e-mail or telephone as soon as practicable, but no later than 2 weeks after discovery of any activity that is inconsistent with the institutional control objective or use restrictions, exposure assumptions, or any action that may interfere with the effectiveness of the institutional controls. Joint approval from the Air Force, EPA and the State of California will be required for any proposed modifications of institutional controls described in the ROD.

- Before transfer of title to the property including one or more of the sites at which institutional controls are selected, the Air Force will execute a Land Use Covenant

with the state that includes the selected restrictions. The State Land Use Covenant will be recorded before the recording of the federal deed.

- Part 2B – Institutional Controls Implemented by Sacramento County
  - Zoning and other ordinances
  - Local permits
  - Advisories
- Part 2C – Institutional Controls Implemented by the State
  - State Land Use Covenant

2.6.3 Alternative 3A – Excavation/Landfill (Unrestricted Land Use) and Alternative 3B – Excavation/Landfill (Restricted Land Use)

Under Alternatives 3A and 3B, Initial Parcel sites contaminated with non-VOCs, metals, or TPH that exceed cleanup goals will be excavated and the soil/debris transported to an offbase landfill for permanent disposal. The offbase disposal may be at a Class I or Class II landfill as appropriate. However, for most sites within the Initial Parcel, disposal at a Class II landfill will be acceptable

Alternative 3A uses a lower set of cleanup goals for TPH as compared to Alternative 3B. The cleanup goals for the other non-VOCs remain the same. The resulting land use under Alternative 3A is unrestricted if no other contaminants (e.g., VOCs) are present, and under Alternative 3B, the resulting land use is restricted. Under Alternative 3A, no long-term monitoring would be required. Under Alternative 3B, the institutional controls would continue and long-term monitoring would be required because of the residual levels of TPH remaining at the site. Long-term institutional controls will be implemented and maintained as discussed in Alternative 2, Section 2.6.2. Site-specific long-term groundwater monitoring protocols will consist of tailored monitoring frequencies for each site which address all contaminants posing a threat to groundwater. In general, a groundwater sample will be collected from the nearest down-gradient groundwater well. Data Quality Objectives will be tailored to meet long-term monitoring requirements for ROD compliance

Excavation will be conducted using conventional earthmoving equipment. In areas where the extent of the target volume is uncertain, field screening and/or laboratory analysis may be used to guide excavation. Waste-stream profile sampling of the excavated materials will be conducted to determine if the material meets the waste acceptance criteria at the receiving landfill. Soil excavated from most Initial Parcel sites is not expected to be hazardous and will likely be sent to a Class II landfill for final disposal. No treatment of the excavated materials will be conducted at McClellan under this alternative.

Site controls, such as fencing, signage, and security, will be implemented as necessary during the remedial action. Following initial excavation, confirmation sampling will be conducted to verify that cleanup goals have been achieved. If the analytical results indicate that contamination has been adequately removed, then the excavation void will be backfilled with clean, compacted imported soil or clean soil from McClellan's clean soils holding area. Otherwise, excavation will continue until cleanup goals are achieved.

2.6.4 Alternative 4A – Bioventing (Unrestricted Land Use) and Alternative 4B – Bioventing (Restricted Land Use)

Under Alternatives 4A and 4B, bioventing will be implemented at Initial Parcel sites contaminated with TPH only. As with Alternatives 3A and 3B, Alternative 4A uses a lower set of cleanup goals for TPH as compared to Alternative 4B. Under Alternative 4A, after bioventing is completed and the system components are decommissioned, the site will be available for unrestricted use if no other contaminants (e.g., VOCs) are present. No long-term monitoring would be required. Under Alternative 4B, the institutional controls would continue in perpetuity and long-term monitoring would be required because of the residual levels of TPH remaining at the site. Long-term institutional controls will be implemented and maintained as discussed in Alternative 2, Section 2.6.2.

Because Alternative 4A and 4B are only applicable at sites with fuel-related contamination and sites with only fuel-related contamination are excluded from CERCLA, these alternatives are not discussed further in this ROD. A detailed description of these alternatives is provided in the FS.

2.6.5 Alternative 5 – Excavation/Treatment/Backfill (Unrestricted Land Use)

Under Alternative 5, Initial Parcel sites contaminated with only non-VOC organic and TPH contaminants will be excavated, the soil treated using a thermal desorption process, and the treated soil re-used as backfill in the site excavation. This alternative is ineffective for treating metals. After the excavation void is backfilled with thermally treated soil, the site will be available for unrestricted use if the lower cleanup goals for TPH are attained and no other contaminants (e.g., VOCs) are present. Institutional controls will be implemented until the remedial action is completed. If the lower cleanup goals are not attained for TPH-contaminated sites, long-term institutional controls and groundwater monitoring will be implemented. Site controls, such as fencing, signage, and security, will be implemented as necessary during the remedial action.

Excavation will be conducted using conventional earthmoving equipment. In areas where the extent of the target volume is uncertain, field screening and/or laboratory analysis may be used to guide excavation. Following excavation, confirmation sampling will be conducted to verify that Initial Parcel cleanup goals for non-VOCs or TPH have been achieved. If the analytical results indicate that contamination has been adequately removed, then excavation will be complete. Otherwise, excavation will continue until the cleanup goals are achieved. Long-term monitoring will not be required after excavation activities have been completed.

Contaminated soil excavated from a site will be transported to an onbase thermal desorption treatment facility. At this facility, the soil will be heated to remove the contaminants. The treated soil will then be sampled and analyzed to determine if cleanup goals have been achieved by the thermal desorption process. If the cleanup goals are achieved, the treated soil will be re-used as backfill at the site of excavation. If treatment does not achieve the cleanup goals, the soil will be retreated or transported to an offbase landfill for disposal.

2.6.6 Alternative 6 – Multilayer Cap (Restricted Land Use)

Under Alternative 6, an individual Initial Parcel site contaminated with non-VOCs will be covered with an engineered multilayer cap to eliminate human and ecological receptor exposure pathways, reduce infiltration of precipitation, and minimize potential leaching of contaminants to groundwater. Construction of a cap will also require implementation of institutional controls and restricted land use to prevent uncontrolled excavation or other activities that could damage the cap and create exposure pathways to human and ecological receptors. Site controls, such as fencing, signage, and security, will be implemented as necessary to restrict access to the cap. Long-term monitoring will be required to verify the continued effectiveness of the cap. If a threat to groundwater remains at the site (i.e., a designated waste is present), then groundwater monitoring will be required. Many other Title 27 requirements could apply depending on the type of cap and other site-specific details.

Construction of a multilayer cap may also include biotic barriers and erosion-control measures. Subsurface completions may be possible at some Initial Parcel sites to reduce restrictions on land use. Other cap types that may be effective include clay, soil, and synthetic membrane. Asphalt and concrete caps may be appropriate for sites with surface-soil contamination only.

2.6.7 Alternative 7 – Excavation CAMU (Restricted Land Use)

Alternative 7 consists of individual site excavations and subsequent consolidation of soil from multiple sites into a CAMU. After a site excavation is completed and the void backfilled with clean soil, the site will be available for unrestricted use if the lower cleanup goals are attained at TPH-contaminated sites and no other contaminants (e.g., VOCs) are present. If the lower cleanup goals are not attained, long-term institutional controls and groundwater monitoring will be implemented at the sites. Institutional controls will be required in perpetuity at the CAMU, and future land use will be restricted at that location. Engineered controls such as signs, fences, and alarms will be used to restrict access to the CAMU. Long-term monitoring will be required to verify the continued effectiveness of the CAMU at containing the contamination.

Similar to the other alternatives, excavation will be conducted using conventional earthmoving equipment. In areas where the extent of the target volume is uncertain, field screening and/or laboratory analysis may be used to guide excavation. Following excavation, confirmation sampling will be conducted to verify that cleanup goals have been achieved. If the analytical results indicate that contamination has been adequately removed, then excavation will be complete. Otherwise, excavation will continue until the cleanup goals are satisfied.

Contaminated soil will be transported from individual excavation sites to the designated CAMU for permanent consolidation. A CAMU is a designated area of land where remediation of RCRA hazardous waste can take place and land disposal restrictions and minimum technology requirements for disposal facilities can be relaxed. A CAMU is appropriate for long-term land-based treatment activities, long-term storage, or permanent disposal of hazardous remediation waste, including soil, debris, and sludge. Remediation wastes from multiple sites can be permanently consolidated in the CAMU. At McClellan, the existing soils staging pile facility (SSPF) could possibly be designated as a CAMU, or

another area onbase could be identified. The SSPF is currently used in support of a series of McClellan soil removal actions. Additional details about the SSPF can be found in the *Final Soils Staging Pile Facility 100 percent Design Work Plan,* (Kleinfelder, 2001).

2.6.8 Common Elements and Distinguishing Features of Each Alternative

These alternatives include common elements as well as distinguishing features. As previously noted, Alternatives 6 and 7 were not evaluated in the detailed analysis, and Alternatives 4A and 4B are not discussed further in this ROD. Therefore, the following discussion summarizes the common elements and distinguishing features of Alternatives 1, 2, 3A, 3B, and 5.

- Alternative 1 is the No Action alternative that is potentially applicable at all sites.
- Alternative 2 is Institutional Controls Only. Institutional controls will be required in perpetuity for Alternatives 2 and 3B because residual contamination remains above levels for unrestricted use.
- Alternatives 3A, 3B, and 5 include the common element of excavation. In addition, the cleanup goals for Alternatives 3A and 5 are the same. The main difference between Alternatives 3A and 3B and Alternative 5 is disposal versus treatment. Soil excavated under Alternatives 3A and 3B is not treated and is managed as per Title 22 and Title 27 CCR for hazardous waste classification and disposal requirements. However, soil excavated under Alternative 5 is treated using a thermal desorption process. Further differences include the cleanup levels between Alternatives 3A and 3B. The cleanup goals for Alternative 3A are lower for TPH contamination as compared to Alternative 3B.
- The resulting land use is restricted for Alternatives 2 and 3B.
- The resulting land use is unrestricted for Alternatives 1, 3A, and 5.
- Cleanup goals for the alternatives which involve remediation to unrestricted use levels (Alternatives 3A and 5) are primarily driven by protection of human health under CERCLA.
- Alternatives that do not involve cleanup to unrestricted use levels (Alternatives 2 and 3B) must attain applicable or relevant and appropriate requirements (ARAR) related to institutional controls.

Innovative technologies and presumptive remedies were not incorporated as part of the remedies, therefore these are neither common elements or distinguishing features and are not addressed in this section.

2.7 Summary of Comparative Analysis of Alternatives

In accordance with the NCP, the remedial alternatives are evaluated against the nine EPA criteria (Section 300.430 (f)(5)(i). These criteria are categorized into three groups:

1. Threshold criteria
2. Primary balancing criteria
3. Modifying criteria.

Threshold criteria are requirements that each alternative must meet to be eligible for selection as the preferred alternative. The criteria include overall protection of human health and the environment and compliance with ARAR [2]. Primary balancing criteria are used to weigh effectiveness and cost tradeoffs among alternatives. The balancing criteria include long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost. The primary balancing criteria represent the main technical criteria upon which the alternative evaluation is based. Modifying criteria include State acceptance and community acceptance, and may be used to modify aspects of the preferred alternative when preparing this Initial Parcel ROD #1. Following is a brief description of what each the of the evaluation criterion addresses followed by the comparative analysis of the alternatives.

2.7.1 Description of Evaluation Criteria

Criterion 1: Overall Protection of Human Health and the Environment – Addresses whether each alternative provides adequate protection of human health and the environment and describes how risks posed through each exposure pathway are eliminated, reduced, or controlled, through treatment, engineering controls, and/or institutional controls.

Criterion 2: Compliance with ARARs – Section 121(d) of CERCLA and NCP 300.430(f)(1)(ii)(B) requires that remedial actions of CERCLA sites at least attain, unless such ARARs are waived under CERCLA Section 121(d)4.

Criterion 3: Long-term Effectiveness and Permanence – Long-term effectiveness and permanence refers to expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup levels have been met. This criterion includes the consideration of residual risk that will remain onsite following remediation and the adequacy and reliability of controls.

Criterion 4: Reduction of Toxicity, Mobility, or Volume through Treatment – Reduction of toxicity, mobility, or volume through treatment refers to the anticipated performance of the treatment technologies that may be included as part of a remedy.

Criterion 5: Short-Term Effectiveness – Short-term effectiveness addresses the period of time needed to implement the remedy and any adverse impacts that may be posed to workers, the community, and the environment during construction and operation of the remedy until cleanup levels are achieved.

Criterion 6: Implementability – Implementability addresses the technical and administrative feasibility of a remedy from design through construction and operation. Factors such as availability of services and materials, administrative feasibility, and coordination with other government entities are also considered.

Criterion 7: Cost – The cost of an alternative addresses all engineering, construction, and O&M costs incurred over the life of the project. The assessment against this criterion is based on the estimated present worth of these costs for each alternative. Present worth is used to estimate expenditures that occur over different lengths of time.

[2] State requirements, standards, criteria, and limitations are collectively referred to as ARARs.

Criterion 8: State Acceptance – This assessment evaluates the technical and administrative issues, concerns, and preferences the state may have regarding each of the alternatives.

Criterion 9: Community Acceptance – This assessment evaluates the issues, concerns, and preferences the public may have regarding each of the alternatives.

2.7.2 Comparative Analysis of Alternatives

The advantages and disadvantages of the alternatives relative to one another based on the nine evaluation criteria are summarized in this section (see the last two paragraphs of Section 2.6 for why alternatives 4, 6, and 7 were dropped from consideration). Site-specific details were considered when comparing the performance of each alternative. However, not all of the alternatives are evaluated for each site because not all alternatives are appropriate at every site. For example, Alternative 5 could only be used at sites with SVOC contamination because thermal desorption is ineffective in treating metals. Following are the alternatives compared in this section:

- Alternative 1 – No Action (Unrestricted Land Use)
- Alternative 2 – Institutional Controls (Restricted Land Use)
- Alternative 3A – Excavation/Landfill (Unrestricted Land Use)
- Alternative 3B – Excavation/Landfill (Restricted Land Use)
- Alternative 5 – Excavation/Treatment/Backfill (Unrestricted Land Use)

The comparative analysis is organized by criteria in the following text. While some site-specific information is included in the text, tables are provided for each site (Tables 2-2 through 2-4) with a summary of the comparative analysis specific to that site. The results of the comparative analysis are summarized below for PRL S-014, SA 003, and SA 035. Non-VOC CERCLA contaminants in soil were identified as COCs at these three sites. However, subsequent to completing the comparative analysis in Initial Parcel FS #1, additional characterization and limited excavation were performed at SA 035 and the contamination was removed. Non-VOC CERCLA contaminants are not present in soil at levels of concern at PRL S-033, SA 041, and SA 091, therefore these sites were not included in the detailed or comparative analyses of alternatives and are not discussed in this section.

- PRL S-014 was evaluated for Alternatives 1, 2, 3A, and 5 (see Table 2-2). PRL S-014 was not evaluated for Alternative 3B because TPH is not a COC at the site. Based on the comparative analysis, Alternative 3A attains the greatest benefit at the least cost. However, a modification of Alternative 5 with offsite treatment might have many of the same advantages but would be somewhat more expensive. Alternative 1 does not meet the threshold criteria. A detailed cost analysis for the selected remedy for this site, Alternative 3A is presented in the Initial Parcel FS #1, Appendix C, Tables C-1 and C-3.

- SA 003 was evaluated for Alternatives 1, 2, 3A, and 3B (see Table 2-3). SA 003 was not evaluated for Alternative 5 because TPH and metals are commingled at the site. Based on the comparative analysis, Alternative 3A attains the greatest benefit at the least cost. Alternatives 1 and 2 do not meet the threshold criteria as described below.

- SA 035 was evaluated for Alternatives 1, 2, and 3A (see Table 2-4). SA 035 was not evaluated for Alternative 3B because TPH is not a COC at the site, and SA 035 was not evaluated for Alternative 5 because the SVOC COC, bis2CEE, is commingled with

metals. Based on the comparative analysis, Alternatives 1 or 3A would be effective, although Alternative 3A has a higher cost.

2.7.2.1 Protection of Human Health and the Environment

For PRL S-014, Alternatives 3A and 5 will provide a high level of protection of human health and the environment because the contaminants are physically removed from the site. Specifically with Alternative 5, the contaminants are treated; however, some risk associated with the treatment residuals remains. Under Alternatives 3A, a potential risk to human health and the environment is also posed because the contamination is transported to a disposal facility instead of being treated. Alternative 2 – Institutional Controls Only – is less protective than Alternatives 3A and 5 because untreated and uncontained soil contaminants are allowed to remain in place. The risk to human health and surface water from soil contaminants is reduced through the use of institutional controls, and because of the concentrations of COCs present at PRL S-014, there is no threat to groundwater quality at the site. Alternative 1 would not reduce the risk to human health and the environment.

For SA 003, Alternatives 3A and 3B are protective of human health and the environment. However, Alternative 3B is slightly less protective than Alternative 3A because institutional controls are utilized to protect human health and surface-water quality from residual TPH at the site after the excavation is complete. Alternative 2 will prevent impacts to human health and surface water quality, but will not protect groundwater. Alternative 1 will not reduce the risk to human health and the environment.

For SA 035, Alternative 3A provides the highest level of protection of human health and the environment when compared to Alternative 2. Under Alternative 3A, the contaminants are physically removed from the site, as previously discussed. Under Alternative 2, the contaminants remain on site and the use of institutional controls reduces the potential risk to human health and surface water, and based on the concentrations of COCs present at SA 035, there is also no threat to groundwater quality at the site.

Under Alternative 1, no significant impacts to human health and the environment are expected at SA 035. Only single detections of two contaminants (arsenic and bis2CEE) were reported at concentrations in excess of the cleanup goal. These two detections were from the same shallow soil sample collected at the northwest corner of Building 20. Bis2CEE was not detected in any other samples collected at SA 035; and the detection of bis2CEE was bounded laterally by three additional sample locations within 15 feet of the detection and vertically by a sample collected 2 feet below the detection. In addition, limited excavation of this location was performed during additional characterization of the site in December 2003. Bis2CEE was not detected in subsequent confirmation samples and the reported arsenic concentrations were below or only slightly greater than the "combined" background concentration.

2.7.2.2 Compliance with ARARs

For Alternative 1 at PRL S-014, ARARs requiring cleanup of wastes that pose a risk to human health and the environment have not been met. In addition, ARARs related to management of wastes that will remain in place have not been met. All other alternatives evaluated for PRL S-014 (Alternatives 2, 3A, and 5) comply with potentially applicable ARARs.

TABLE 2-2
Detailed Analysis Summary for PRL S-014
Former McClellan Air Force Base Initial Parcel Record of Decision #1

Criteria[a]	Alternative 1: No Action	Alternative 2: Institutional Controls Only	Alternative 3A: Excavation/Landfill	Alternative 5: Excavation/Treatment/Backfill
	Unrestricted Land Use	**Restricted Land Use**	**Unrestricted Land Use**	**Unrestricted Land Use**
Threshold Criteria				
Protection of Human Health and Environment	No. Potential impacts to surface water and human health from PCBs in surface and shallow soil.	Yes. If institutional controls are successfully implemented the exposure pathways are incomplete.	Yes. Contaminants are physically removed from the site for offsite disposal.	Yes. Contaminants are physically removed from the site and treated.
Compliance with ARARs	No. Impacts to human health and the environment are likely.	Yes.	Yes	Yes.
Primary Balancing Criteria				
Long-term Effectiveness and Permanence	No. For PCBs in the exposure area north of Building 22 using the unrestricted use scenario (0 to 2 feet bgs interval), the carcinogenic risk is 5E-05 for the residential adult and the hazard index is 8 for the residential child.	Yes. If institutional controls are successfully implemented. Institutional controls will "run with the land," and layering of institutional controls will improve their reliability. Unrestricted risk is 5E-05 for PCBs and the outdoor occupational risk is 5E-06, but exposure pathways are incomplete with implementation of institutional controls.	Yes. Contaminants are physically removed from the site. The Air Force retains liability for untreated waste in landfill. The residual risk for PCBs is less than or equal to 1E-06.	Yes. Treatment is effective and permanent. The residual risk for PCBs is less than or equal to 1E-06.
Reduction in Toxicity, Mobility, and Volume	None.	None.	None. However, toxicity, mobility, and volume are reduced at the site upon excavation.	Yes. Toxicity, mobility, and volume are reduced during treatment.
Short-term Effectiveness	Not applicable for No Action.	No. Contaminated soil is not disturbed. Institutional controls include responding to breaches as necessary.	Short-term risks during excavation and transport can be managed.	Short-term risks during excavation, transport, and treatment can be managed.
Implementability	Not applicable for No Action.	Implementable. Coordination between EPA, State, Sacramento County, and AFRPA is required.	Readily implementable.	Implementable. Specialized vendors are available. Soil handling during treatment may be difficult due to the presence of silts and clays.
Total Cost (PW_{30})	$0 ($0)	$453,000 ($280,000)	$139,000 ($134,000)	$820,000 ($790,000)

Notes:
[a] State and community acceptance are modifying criteria that are discussed at the end of Section 2.7.2.
PRL S-014 was not evaluated for Alternatives 3B (Excavation/Landfill – Restricted Land Use), 4A (Bioventing – Unrestricted Land Use), and 4B (Bioventing – Restricted Land Use) because TPH is not a COC at the site.
Alternative 6 (Multilayer Cap – Restricted Land Use) and Alternative 7 (Excavation/CAMU) were not retained for detailed analysis at any site. (See Section 4.2 of Initial Parcel FS #1.)
(PW_{30}) = Present worth 30-year costs are shown in parenthesis.

TABLE 2-3
Detailed Analysis Summary for SA 003
Former McClellan Air Force Base Initial Parcel Record of Decision #1

Criteria[a]	Alternative 1: No Action	Alternative 2: Institutional Controls Only	Alternative 3A: Excavation/Landfill	Alternative 3B: Excavation/Landfill
	Unrestricted Land Use	**Restricted Land Use**	**Unrestricted Land Use**	**Restricted Land Use**
Threshold Criteria				
Protection of Human Health and Environment	No. Potential impacts to groundwater, surface water, and human health.	No. Institutional controls will not prevent impacts to groundwater from TPH contamination.	Yes. Contaminants are physically removed from the site for offsite disposal.	Yes. Contaminants are physically removed from the site for offsite disposal. institutional controls prevent impacts to human health and surface water in the short-term and long-term.
Compliance with ARARs	No. Impacts to human health and the environment are likely.	No. Impacts to the environment are likely.	Yes.	Yes.
Primary Balancing Criteria				
Long-term Effectiveness and Permanence	No. Although the risk assessment is incomplete because of data gaps at the site, the residual risk for the unrestricted use scenario exceeds 1E-06.	If successfully implemented, institutional controls can protect human health at the ground surface and surface water, but institutional controls cannot prevent impacts to groundwater from TPH contamination. However, TPH will degrade naturally over time.	Yes. Contaminants are physically removed from the site. The residual risk for individual COCs is less than or equal to 1E-06.	Yes. Contaminants are physically removed from the site. Long-term institutional controls are implemented to prevent the possibility of impacts to human health and surface water. Groundwater monitoring 15 performed to verify that residual TPH does not impact groundwater. The residual risk for individual COCs is less than or equal to 1E-06.
Reduction in Toxicity, Mobility, and Volume	None.	None.	None. However toxicity, mobility, and volume are reduced at the site upon excavation.	None. However toxicity, mobility, and volume are reduced at the site upon excavation.
Short-term Effectiveness	Not applicable for No Action.	No. Contaminated soil is not disturbed. Institutional controls include responding to breaches as necessary.	Short-term risks during excavation and transport can be managed.	Short-term risks during excavation and transport can be managed.
Implementability	Not applicable for No Action.	Implementable. Coordination between EPA, State, Sacramento County, and AFRPA is required.	Readily implementable.	Readily implementable.
Total Cost (PW_{30})	$0 ($0)	$453,000 ($280,000)	$362,000 ($348,000)	$608,000 ($482,000)

Notes:
[a] State and community acceptance are modifying criteria that are discussed at the end of Section 2.7.2.
SA 003 was not evaluated for Alternatives 4A (Bioventing – Unrestricted Land Use), 4B (Bioventing – Restricted Land Use), and 5 (Excavation/Treatment/Backfill – Unrestricted Land Use) because TPH and metals are commingled at the site.
Alternative 6 (Multilayer Cap – Restricted Land Use) and Alternative 7 (Excavation/CAMU) were not retained for detailed analysis at any site. (See Section 4.2 of Initial Parcel FS #1).
(PW_{30}) = Present worth 30-year costs are shown in parenthesis.

TABLE 2-4
Detailed Analysis Summary for SA 035
Former McClellan Air Force Base Initial Parcel Record of Decision #1

Criteria[a]	Alternative 1: No Action	Alternative 2: Institutional Controls Only	Alternative 3A: Excavation/Landfill
	Unrestricted Land Use	**Restricted Land Use**	**Unrestricted Land Use**
Threshold Criteria			
Protection of Human Health and Environment	Single isolated shallow detections of arsenic and bis2CEE represent minimal risk to human health and the environment. Results of additional characterization performed in December 2003 indicate that bis2CEE is non-detect and arsenic concentrations are near background.	Yes. If institutional controls are successfully implemented the exposure pathways are incomplete.	Yes. Contaminants are physically removed from the site for offsite disposal.
Compliance with ARARs	Not applicable.	Yes.	Yes.
Primary Balancing Criteria			
Long-term Effectiveness and Permanence	Carcinogenic risk for the residential scenario exceeds 1E-03 for bis2CEE and arsenic. Excluding the produce pathway, the carcinogenic risk for the residential scenario exceeds 2E-05 for bis2CEE and arsenic. However, these risks are overestimated for current conditions. Results of additional characterization performed in December 2003 indicate that bis2CEE is non-detect and arsenic concentrations are near background.	Yes. Institutional controls are successfully implemented and exposure pathways are incomplete. Institutional controls will "run with the land" and layering of institutional controls will improve their reliability. For the outdoor occupational scenario, the carcinogenic risk is 5E-06 and the hazard index is less than 1. The risk is primarily due to the identified COCs, arsenic and bis2CEE, in soil. For the construction worker scenario, the risk is 1E-06 and the hazard index is less than 1 for the construction worker scenario. The risk is primarily due to arsenic in soil.	Yes. Contaminants are physically removed from the site. The residual risk for individual COCs is less than or equal to 1E-06.
Reduction in Toxicity, Mobility, and Volume	None.	None.	None. Although toxicity, mobility, and volume are reduced at the site upon excavation.
Short-term Effectiveness	Not applicable for No Action.	No. Contaminated soil is not disturbed. Institutional controls include responding to breaches as necessary.	Short-term risks during excavation and transport can be managed.
Implementability	Not applicable for No Action.	Implementable. Coordination between EPA, State, Sacramento County, and AFRPA is required.	Readily implementable.
Total Cost (PW_{30})	$0 ($0)	$453,000 ($280,000)	$118,000 ($113,000)

Notes:
[a] State and community acceptance are modifying criteria that are discussed at the end of Section 2.7.2.
SA 035 was not evaluated for Alternatives 3B, 4A, and 4B because TPH is not a COC at the site, and SA 035 was not evaluated for Alternative 5 because the SVOC COC, bis2CEE, is commingled with metals.
Alternative 6 (Multilayer Cap – Restricted Land Use) and Alternative 7 (Excavation/CAMU) were not retained for detailed analysis at any site. See Section 4.2 of the Initial Parcel FS #1.
(PW_{30}) = Present worth 30-year costs are shown in parenthesis.

For SA 003, Alternatives 3A and 3B will comply with potential ARARs, but Alternatives 1 and 2 do not. For Alternative 1, ARARs requiring cleanup of wastes that pose a risk to human health and the environment have not been met. In addition, ARARs related to management of wastes that will remain in place have not been met. For Alternative 2, implementation of institutional controls alone will not be protective of groundwater quality.

For SA 035, Alternatives 2 and 3A will comply with potentially applicable ARARs. ARARs are not applicable for the No Action alternative. As stated in the previous section, significant impacts to human health and the environment are unlikely from the reported concentrations of arsenic and bis2CEE.

2.7.2.3 Long-term Effectiveness and Permanence

For PRL S-014, the long-term effectiveness and permanence of Alternatives 3A and 5 are high and nearly equal. Excavation and offbase disposal of contaminated soil under Alternative 3A and excavation, treatment, and reuse of the soil under Alternative 5 include the physical removal of contamination, which is reliable and verifiable. In addition, Alternative 5 relies on treatment of the contaminated soil. The risk associated with treatment residuals for Alternative 5 is likely less than the risk associated with the untreated soil disposed of in a Class II landfill for Alternative 3A. The long-term effectiveness and permanence of Alternative 2 at PRL S-014 depends on the maintenance, monitoring, and enforcement of the institutional controls. Parts 2A, 2B, and 2C are nearly equally as protective of human health and the environment. Long-term rights of access can be implemented under Parts 2A and 2C, but not under Part 2B. Informational devices can be nearly equally implemented under Parts 2A and 2B.

Institutional controls are susceptible to changes in political jurisdiction, legal interpretations, and enforcement, and would be required in perpetuity. Therefore, the long-term reliability of individual institutional controls under Alternative 2 to prevent exposure to contaminated soil is not certain. However, the effectiveness of land use restrictions can be strengthened by implementing an institutional control management plan and by applying mutually reinforcing mechanisms (institutional control layering strategy); for example, government controls (i.e. AFRPA, Sacramento County, and the state), can be used to zone property for industrial and commercial uses only. This action can be strengthened by applying proprietary controls, which are an aspect of private property law that can be used to restrict or affect the use of property. Common examples include deed covenants or easements restricting future land use or prohibiting activities that may compromise the remedy. Effectiveness is further enhanced by ongoing EPA oversight of implementation of the institutional controls. The long-term effectiveness and permanence of Alternative 2 is less certain if any one of the three parts (Parts 2A, 2B, or 2C) is not implemented.

For PRL S-014, no actions are implemented to manage untreated wastes and risks that remain at the site for Alternative 1; therefore, the criterion for long-term effectiveness and permanence is not met.

For SA 003, the long-term effectiveness and permanence of Alternative 3A is high, although there is some risk associated with the untreated soil disposed in a Class II landfill. Alternative 3B is slightly less protective than Alternative 3A because institutional controls are used to protect human health and surface-water quality from residual TPH at the site

after the excavation is complete. Alternative 2 is not effective for the protection of groundwater at SA 003. For Alternative 1, the criterion for long-term effectiveness and permanence is not met because no actions are implemented to manage untreated wastes and risks that remain at the site.

At SA 035, the long-term effectiveness and permanence of Alternative 3A is high. Excavation and offsite disposal of contaminated soil is reliable and verifiable. Alternative 2 is effective and permanent because significant impacts to human health and the environment are unlikely from the reported concentrations of arsenic and bis2CEE. At SA 035, significant impacts to human health and the environment are unlikely. Therefore, Alternative 1 is effective and permanent at this site also.

2.7.2.4 Reduction of Toxicity, Mobility, or Volume through Treatment

Alternative 5 significantly reduces contaminant toxicity, mobility, and volume through treatment. The treatment technology used on the soil is irreversible, and the alternative meets the statutory preference for treatment. Alternatives 3A and 3B do not reduce the toxicity or volume of contaminants unless the soil is treated prior to disposal. However, under these alternatives, toxicity, mobility, and volume at the site are effectively reduced by excavation and offsite disposal. The disposal of the contaminated soil at an offsite facility under Alternatives 3A and 3B is reversible, and these alternatives do not meet the statutory preference for treatment unless the soil is treated prior to disposal.

Alternative 2 will provide only moderate reductions in the mobility of contamination. The toxicity and volume of contamination is unaffected by this alternative. Under Alternative 2, contaminants are left in place and institutional controls are maintained to prevent disturbances that might mobilize the contaminants. Alternative 1 will not reduce contaminant toxicity, mobility, and volume through treatment because no treatment technologies are employed.

2.7.2.5 Short-term Effectiveness

All of the alternatives, except Alternative 1, will achieve varying degrees of short-term effectiveness. The more aggressive alternatives (Alternatives 3A, 3B, and 5), those that involve disturbance of the contaminated soil, will entail more potential short-term risks to the community and workers during remedial action. The more passive Alternative 2 will have fewer potential impacts because less disruption of the sites is required to implement these actions.

Alternatives 3A, 3B, and 5 require excavation of contaminated soils, which may temporarily disrupt existing land use and require transport of contaminated soils, which may expose the community and workers to noise, odors, dust, and spills on the roadway. These risks are greater under Alternatives 3A and 3B because of the longer distances traveled to the offsite landfill. However, Alternative 5 requires temporary storage of contaminated soils at the centralized treatment facility, which may increase the level of exposure to dust. Controls would be implemented during excavation, transport, and storage to minimize the potential impacts.

The time required to implement Alternatives 3A, 3B, and 5 are similar (i.e., several months). However, the time to achieve RAOs under Alternative 5 is dependent on the effectiveness of the treatment technology.

Under Alternative 2, contaminants are left in place and institutional controls are implemented, maintained, monitored, and enforced to prevent exposures to human receptors and surface water. These actions, by themselves, will entail no significant adverse risks to the environment or health of the community and workers. Of the alternatives evaluated, Alternative 2 will typically require the least amount of time to implement.

Because no remedial action will be taken under Alternative 1, no environmental impacts will occur, and no short-term risks to the community or to workers as a result of implementing the action will occur. However, RAOs are never achieved with this alternative, so its short-term effectiveness is considered negligible.

2.7.2.6 Implementability

Implementability is evaluated by the technical and administrative feasibility of the alternative and the availability of the required services and materials. For each alternative, the technologies can be constructed and operated, and materials, equipment, vendors, and services are readily available. There are no impediments to implementing future remedial actions for each of the alternatives.

Many of the components of Alternative 2 have already been developed. The Air Force environmental encroachment permit process has already been implemented, and deed covenants can be easily implemented upon property transfer. Advisories can be issued through the existing community relations program. Under Part 2B, Sacramento County would be required to include environmental issues in existing processes (e.g., issuing building and demolition permits). This would require technical knowledge to understand and apply available information from the IRP.

For Alternatives 2 and 3B, reuse may be constrained by the institutional controls, and the risk of future exposure is present if monitoring is insufficient to detect failure of an institutional control. Significant coordination is required between AFRPA, Sacramento County, and the state for this alternative to be successful. For Alternatives 3A, 3B, and 5, excavation with accompanying equipment is readily implementable, technically feasible, and reliable. For Alternative 5, administrative coordination may be necessary to address any air discharge issues associated with treatment.

With the exception of Alternative 1, all alternatives require coordination with other remedial programs that are addressing VOCs in soil and groundwater.

2.7.2.7 Cost

The estimated costs for implementing the alternatives are summarized in Tables 2-2 through 2-4 for PRL S-014, SA 003, and SA 035, respectively. More detailed cost estimates for the selected remedies are provided in Section 2.9.3, and detailed cost estimates for all alternatives are presented in the Initial Parcel FS #1, Appendix C, Tables C-1 and C-3. Alternative 1 does not have any costs associated with it. The present-worth cost of Alternative 2 was calculated for periods ranging from 30 to 1,000 years. At 30 years, the present-worth cost is 70 percent of the cost at 1,000 years, which is $400,000 per site; and at

100 years the present-worth cost is $390,000, which is 98 percent of the cost at 1,000 years. The present-worth cost is nearly constant after 140 years.

For PRL S-014, at a total cost of $820,000, Alternative 5 is significantly more expensive than Alternatives 2 and 3A at total costs of $453,000 and $139,000, respectively. Thermal treatment is more expensive than offsite disposal primarily because of the costs associated with mobilization/demobilization of the thermal treatment system for a small quantity of soil (290 cubic yards at PRL S-014). The mobilization/demobilization cost for Alternative 5 is a significant uncertainty. This cost was based on results of the recently completed treatability study (URS, 2002). Smaller treatment units with lower mobilization/ demobilization costs may be available for the relatively small volume of soil to be treated under Alternative 5, but these smaller units may not be able to attain the lower cleanup goals required. Alternatively, the soil could be shipped offsite for treatment. The total cost for modified Alternative 5 for PRL S-014 could be as low as $220,000 if an offsite vendor were used.

Although the target volume for Alternative 3B at SA 003 is slightly smaller than for Alternative 3A, the cost for Alternative 3B is significantly more than for Alternative 3A. Alternative 3B is more expensive because it includes long-term institutional controls and groundwater monitoring. These long-term costs are incurred because residual levels of TPH are left in-situ under Alternative 3B. The 30-year present-worth cost of Alternative 2 is less than the 30-year present-worth cost of Alternative 3A for SA 003. However, the costs for institutional controls continue to be incurred after 30 years for Alternative 2.

For SA 035, Alternative 2 is significantly more expensive that Alternative 3A on total cost and present-worth bases, and costs will continue to be incurred for Alternative 2 after 30 years. For Alternative 3A, approximately two-thirds of the total cost is for preparing the necessary work plan and remedial action closeout report.

2.7.2.8 State Acceptance

Generally, the state believes Alternative 3A is better than Alternative 2 because it costs substantially less and remediates the contamination.

2.7.2.9 Community Acceptance

A public comment period on the Proposed Plan was held from September 15, through October 15, 2003, and a public meeting was held on September 30, 2003. Public comments were received (see the Responsiveness Summary in Section 3). The public comments indicate no disagreement with the Air Force's selected remedies.

2.8 Principal Threat Wastes

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a site wherever practicable. The principal threat concept applies to source materials that are highly mobile or highly toxic and cannot be reliably controlled in place, or would present a significant risk to human health or the environment should exposure occur. A source material is material that includes or contains hazardous substances, pollutants, or contaminants that act as a reservoir for migration of contamination to groundwater, surface water, or air or acts as a source for direct exposure.

Non-VOC soil contaminants at PRL S-014 and SA 003 have been determined through risk assessments to pose a threat to human health. However, the contaminants at these sites would not be considered a principal threat waste because the non-VOC contamination is not highly mobile and toxicity is moderate. Additionally, human health risk estimates for soil at SA 035 exceeded thresholds, but significant impacts to human health and the environment are unlikely from the isolated detections. There are also no principal threat wastes at SA 035.

2.9 Selected Remedy

In the following sections, the rationale for the selection of the remedy, a detailed description of the remedy, the estimated costs, and the expected outcomes of the remedy are provided by site.

2.9.1 Summary of the Rationale for the Selected Remedy

The following are the principal factors upon which the remedy selection was based:

- PRL S-033 – The key rationale for selecting the No Action alternative is that a prior removal action already addressed the COCs in soil through an excavation/landfill remedy. The final risk assessment confirmed the cleanup goal of 1×10^{-6} was achieved for the COCs in soil, and there are no threats to surface water or groundwater remaining at this site. Therefore, no further action is warranted at this site under CERCLA for non-VOCs.
- SA 041 – The key rationale for the selection of the No Action alternative is that no COCs were identified for the site. Suspected sources or possible contaminant pathways were not identified due to building features, and no evidence of spills was noted.
- SA 091 – The key rationale for the selection of the No Action alternative is that no COCs were identified for the site. Numerous samples were collected and tested for pesticides and other contaminants; however, all samples were below action levels. Therefore, no action is warranted at this site under CERCLA for non-VOCs.
- SA 035 – The key rationale for the selection of the No Action alternative is that although COC were identified at the site, the Air Force conducted limited soil removal as part of additional site characterization. Analytical results demonstrate that the organic bis2CEE is non-detect, and arsenic levels are consistent with background. As a result, at this site no threats remain due to non-VOC contamination; therefore, no action is necessary at this site.
- SA 003 and PRL S-014 – The risk estimates for PRL S-014 north exceed a hazard indices of 1 and the EPA's threshold of acceptable risk for residential use (i.e., excess cancer risk exceeds 1×10^{-6}) because PCB-1260 is present in soil. At SA 003, the concentrations of lead, barium, TPH-G, and TPH-D exceed cleanup levels in soil. A response action is necessary at these sites to protect the public health and welfare or the environment from actual or threatened releases of hazardous substances in the environment. Selection of Alternative 3A – Excavation/Landfill – in this ROD was made primarily because removing the contamination to levels acceptable for unrestricted use is more cost-effective than maintaining land use restrictions on the property. Alternative 3A also satisfies the ARARs. Under the Selected Alternative, the time to clean up both sites is

projected to require 1 year. Because contaminated soil is removed from the site, the source of risk to human health and the environment is gone. Although the alternative does not fulfill the preference for treatment, the toxicity, mobility, and volume of contaminated soil are reduced at the site. (Other aspects of the cleanup for soil and groundwater at McClellan do incorporate treatment as a principal element.) Long-term O&M will not be required and no site-specific monitoring is needed.

2.9.2 Description of the Selected Remedy

The selected remedy under CERCLA is described below for non-VOC contamination in soil at each of the six (CERCLA contaminated) sites.

SA 003 and PRL S-014 – Under the selected alternative of Excavation/Landfill, the following remedy components will be included:

- Remedial action work plans will be prepared for agency approval.
- Pre- and post-excavation sampling and analysis will be performed, first to fine-tune the excavation target volume, and second to confirm cleanup levels have been achieved. The cleanup levels support unrestricted use of the property (e.g., concentrations in soil equivalent to a carcinogenic risk of 1×10^{-6} for each contaminant). At SA 003, data gaps associated with the extent of metal contamination in soil along the northern portion of the target volume will be resolved during the remedial design phase. In addition, data gaps related to the presence or absence of other non-VOC contaminants (hexavalent chromium, PCBs, PAHs, and pesticides) will be resolved at SA 003. At PRL S-014, data gaps associated with the extent of PCB contamination adjacent to the transformer north of Building 22 and the presence or absence of PCB, PAH, and metal contamination within the former hazardous waste storage area will be resolved during the remedial design phase.
- Excavation related equipment will be mobilized and demobilized to each site.
- Site controls, such as signage, fencing, and security, will be implemented during the remedial action.
- Approximately 2,500 cubic yards of contaminated soil will be removed from SA 003, and 300 cubic yards from PRL S-014.
- Excavated soils will be characterized and disposed of at either a Class I or Class II landfill depending on measured contaminant levels.
- Clean fill soil will be procured and placed as backfill, and site features such as pavement and landscaping at each site will be restored.
- Data validation, final risk assessments, Environmental Resources Program Information Management System data submittals, and site closeout reports will be prepared for each site.

In addition, the No Action remedy for non-VOCs in soil has been selected for the following four sites:

- SA 035 – Alternative 1 – No Action was selected as the preferred cleanup alternative. As stated above, the limited soil removal and site characterization activity at this site has resulted in non-detect levels for the organic bis2CEE and background levels of arsenic. There are no significant threats to human health and the environment remaining at this site.
- PRL S-033 – Alternative 1 – No Action was selected because the non-VOC COCs in soil were previously remediated under a removal action.
- SA 041 and SA 091 – Alternative 1 – No Action was selected because there are no COCs.

Because the fuel-related contamination at PRL S-040 is not commingled with CERCLA contaminants, there is no authority under CERCLA to address the contamination. Therefore No Action will be taken under CERCLA, however the contamination will be remediated under state requirements. See Appendix B for additional details.

2.9.3 Summary of Estimated Remedy Costs

A summary of the estimated costs for the selected remedy at SA 003 and PRL S-014 is provided below. Four of the other sites (PRL S-033, SA 035, SA 041, and SA 091) have zero cost associated with the chosen No Action remedy. There are no remediation, institutional control, or O&M costs associated with the No Action remedy for non-VOCs in soil.

The information in the cost estimates for PRL S-014 and SA 003 are based on the best available information regarding the anticipated scope of the remedial alternative. A detailed cost analysis for the selected remedy for these sites (Alternative 3A) is presented in the Initial Parcel FS #1, Appendix C, Tables C-1 and C-3. Costs were estimated in accordance with EPA guidelines (*A Guide to Developing and Documenting Cost Estimates During the Feasibility Study*, OSWER 9355.0-75, July 2000). Per the guidelines, the discount rate used for the calculations was 3.8 percent and was taken from Appendix C of the Office of Management and Budget Circular A-94 (February 2002) for real discount rates over a 30-year period. Changes in the cost elements are likely to occur as a result of new information during the engineering design of the remedial alternative. Major changes may be documented in the form of a memorandum in the Administrative Record file, and Explanation of Significant Difference, or a ROD amendment. This is an order-of-magnitude cost estimate that is expected to be within +50 to –30 percent of the actual projected cost.

Estimated costs for the selected remedy at sites SA 003 and PRL S-014 are summarized in Table 2-5. The total costs and the present-worth 30-year costs are nearly equal because most costs are incurred during 2005. Costs include a work plan and a remedial action closure report. Costs include AFRPA implementation of environmental encroachment permits, quarterly site inspections, and advisories until the remedial action is complete in 2005.

The costs for excavation, dust control, imported backfill (including the material, acceptance sampling, hauling, and dumping), and excavation backfilling depend on the volume of soil excavated. The unit costs for the imported backfill includes the actual soil material, the acceptance sampling to reduce the chance of contaminated offsite backfill, and the cost to haul the backfill and place it in the excavation.

TABLE 2-5
Summary of Estimated Costs for the Selected Alternative – PRL S-014 and SA 003
Former McClellan Air Force Base Initial Parcel Record of Decision 1

	AFRPA Implemented Controls			Excavation/Offsite Disposal					
Site Name	Start	End	Annual Cost	Excavation and Backfill Cost	Disposal Cost	Total Cost	Reports Cost	Total Selected Remedy Cost	Present Worth Remedy Cost
PRL S-014	2004	2005	$8,500	$29,000	$13,000	$42,000	$80,000	$139,000	$134,000
SA 003	2004	2005	$8,500	$155,000	$110,000	$265,000	$80,000	$362,000	$348,000
Total Cost			**$17,000**	**$184,000**	**$123,000**	**$307,000**	**$160,000**	**$501,000**	**$482,000**

Note:
All costs are shown in 2004 dollars.

Unit costs for hauling and disposing of contaminated soils assume hauling to a Class II landfill and disposal as inert waste. Based on a review of the site characterization data, it was assumed that upon excavation the soil would not be classified as a California or RCRA hazardous waste. Therefore, disposal at a Class II facility is appropriate.

The costs include pre-removal sampling and confirmation sampling, concrete cutting and removal, concrete replacement, backfill compaction, imported topsoil material, topsoil hauling, topsoil placement, final grading, and seeding depend on the areal extent of the excavation. Costs for mobilization, demobilization, engineering design, and construction oversight, as well as a 15 percent contingency, are included in the cost estimate.

2.9.4 Expected Outcomes of Selected Remedy

At sites SA 003 and PRL S-014, the non-VOC COCs will be excavated to levels supportive of unrestricted land use. The remedial action is expected to be completed within 2 years. The cleanup levels are protective of human health, surface water, and groundwater. The path-ways considered for human health were direct contact, inhalation, and ingestion of soil. The cleanup levels for protection of human health are equivalent to the lesser of the carcinogenic risk of 1E-06 or a HQ of one for each contaminant for the residential scenario. The cleanup levels are specified in Table 2-6 for PRL S-014 and SA 003. While residential use of the properties is not planned, cleanup of non-VOCs to levels supportive of unrestricted use improves the redevelopment potential for the properties. Confirmation sampling will be performed to ensure that cleanup levels are achieved.

The results of the baseline risk assessment for PRL S-014 indicate that existing conditions at the exposure area north of Building 22 pose an excess lifetime cancer risk of 5E-05 from direct contact with PCB-contaminated soils from 0 to 2 feet bgs. In addition, PCBs in surface soils present a threat to surface water quality. There are no other known or suspected contaminants in soil north of the building. In the exposure area south of Building 22, direct contact with soils from 0 to 2 feet bgs poses an excess lifetime cancer risk of 8E-05 for the residential scenario. The risk is predominantly the result of arsenic in soil. Potential human health risks associated with PCBs and VOCs in soil were each less than 1E-06, and the potential risk associated with VOCs in groundwater were 1E-06. However, PCBs in soil present a threat to surface water quality. This action only addresses the non-VOC contaminant, PCB-1260, in soil at concentrations greater than 0.0054 mg/kg from the ground surface to 1 foot bgs and concentrations greater than 0.063 mg/kg from 1 to 15 feet bgs.

TABLE 2-6
Cleanup Levels for Contaminants of Concern
Former McClellan Air Force Base Initial Parcel Record of Decision 1

Analyte	Cleanup Level	Depth Interval	Basis for Cleanup Level
PRL S-014 Contaminants of Concern			
PCB (Aroclor 1260)	0.0054 mg/kg	0 to 1 foot bgs	Protection of surface water
PCB (Aroclor 1260)	0.063 mg/kg	1 to 15 feet bgs	Protection of human health[a]
SA 003 Contaminants of Concern			
Barium	2,400 mg/kg	0 to 15 feet bgs	Protection of human health[a]
Lead	137 mg/kg	0 to 1 foot bgs	Protection of surface water
Lead	148 mg/kg	1 to 15 feet bgs	Protection of human health[b]
TPH-D	100 mg/kg	0 to 15 feet bgs	Protection of human health, surface water, and groundwater
TPH-G	10 mg/kg	0 to 15 feet bgs	Protection of human health, surface water, and groundwater
SA 003 Potential Contaminants of Concern			
Metals			
Hexavalent Chromium	110 mg/kg	0 to 15 feet bgs	Protection of human health
PCBs			
PCB (Aroclor 1254 and 1260)	0.0054 mg/kg	0 to 1 foot bgs	Protection of surface water
PCB (Aroclor 1254 and 1260)	0.063 mg/kg	1 to 15 feet bgs	Protection of human health[a]
Pesticides			
Aldrin	0.0041 mg/kg	0 to 1 foot bgs	Protection of surface water
Aldrin	0.0092 mg/kg	1 to 15 feet bgs	Protection of human health[a]
DDD	0.026 mg/kg	0 to 1 foot bgs	Protection of surface water
DDD	0.50 mg/kg	1 to 15 feet bgs	Protection of human health[a]
DDE	0.019 mg/kg	0 to 1 foot bgs	Protection of surface water
DDE	0.49 mg/kg	1 to 15 feet bgs	Protection of human health[a]
DDT	0.019 mg/kg	0 to 1 foot bgs	Protection of surface water
DDT	0.47 mg/kg	1 to 15 feet bgs	Protection of human health[a]
Dieldrin	0.0047 mg/kg	0 to 1 foot bgs	Protection of surface water
Dieldrin	0.0058 mg/kg	1 to 15 feet bgs	Protection of human health[a]
Endosulfan	1.8 mg/kg	0 to 1 foot bgs	Protection of surface water
Endosulfan	34 mg/kg	1 to 15 feet bgs	Protection of human health[a]
Endrin	1.1 mg/kg	0 to 1 foot bgs	Protection of surface water
Endrin	4.2 mg/kg	1 to 15 feet bgs	Protection of human health[a]
Heptachlorepoxide	0.0032 mg/kg	0 to 1 foot bgs	Protection of surface water
Heptachlorepoxide	0.0076 mg/kg	1 to 15 feet bgs	Protection of human health[a]

TABLE 2-6
Cleanup Levels for Contaminants of Concern
Former McClellan Air Force Base Initial Parcel Record of Decision 1

Analyte	Cleanup Level	Depth Interval	Basis for Cleanup Level
PAHs			
Acenapthene	290 mg/kg	0 to 15 feet bgs	Protection of human health[a]
Anthracene	2,400 mg/kg	0 to 15 feet bgs	Protection of human health[a]
Benzo(a)anthracene	0.088 mg/kg	0 to 15 feet bgs	Protection of human health[a]
Benzo(a)pyrene	0.011 mg/kg	0 to 15 feet bgs	Protection of human health[a]
Benzo(b)fluoranthene	0.11 mg/kg	0 to 15 feet bgs	Protection of human health[a]
Benzo(g,h,I)perylene	750 mg/kg	0 to 15 feet bgs	Protection of human health[a]
Benzo(k)fluoranthene	0.11 mg/kg	0 to 15 feet bgs	Protection of human health[a]
Chrysene	0.14 mg/kg	0 to 1 foot bgs	Protection of surface water
Chrysene	0.88 mg/kg	1 to 15 feet bgs	Protection of human health[a]
Dibenzo(a,h)anthracene	0.021 mg/kg	0 to 15 feet bgs	Protection of human health[a]
Flouranthene	490 mg/kg	0 to 15 feet bgs	Protection of human health[a]
Fluorene	240 mg/kg	0 to 15 feet bgs	Protection of human health[a]
Indeno(1,2,3-cd)pyrene	0.12 mg/kg	0 to 15 feet bgs	Protection of human health[a]
2-Methylnaphthalene	2.0 mg/kg	0 to 15 feet bgs	Protection of human health[a]
Naphthalene	1.9 mg/kg	0 to 15 feet bgs	Protection of human health[a]
Phenanthrene	270 mg/kg	0 to 15 feet bgs	Protection of human health[a]
Pyrene	350 mg/kg	0 to 15 feet bgs	Protection of human health[a]

[a] Values for protection of human health are equivalent to the lesser of the carcinogenic risk of 1E-06 or a HQ of one for each contaminant for exposure to soil through direct contact, inhalation, and ingestion for the residential scenario.

[b] Values for protection of human health are based on non-cancer health effects (i.e., blood-lead level of 10 µg/dL in children) using the Department of Toxic Substances Control Leadspread 7 model.

Because of the data gaps, the baseline risk assessment for SA 003 is considered incomplete. However, based on a comparison to the risk-based cleanup levels, the risk associated with known non-VOC contaminants in soil (lead and barium) are expected to present an unacceptable risk under the residential scenario. In addition, the presence of elevated concentrations of TPH-G and TPH-D presents a threat to groundwater quality. This action at SA 003 addresses the following contaminants:

- Lead in soil at concentrations greater than background concentrations (137 mg/kg) from the ground surface to 1 foot bgs and concentrations greater than 148 mg/kg from 1 to 15 feet bgs.
- Barium in soil at concentrations greater than 2400 mg/kg from the ground surface to 15 feet bgs.

- TPH-G and TPH-D in soil at concentrations greater than 10 mg/kg and 100 mg/kg, respectively, from the ground surface to 15 feet bgs.
- Confirmation sampling will be performed for other non-VOC contaminants that may be present at the site at elevated concentrations based on site history and previous sampling results. Cleanup levels for these potential COCs (hexavalent chromium, PCBs, PAHs, and pesticides) at SA 003 are also provided in Table 2-6.

No action will be taken at PRL S-033, SA 035, SA 041, and SA 091. Non-VOC COCs are present at levels consistent with unrestricted land use.

2.10 Statutory Determinations

Under CERCLA 121 and the NCP, the lead agency must select remedies that are protective of human health and the environment, comply with ARARs (unless a statutory waiver is justified), are cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduces the volume, toxicity, or mobility of hazardous wastes as a principal element and bias against offsite disposal of untreated wastes.

The Air Force and EPA have determined that no action is required for non-VOCs in soil at SA 035, SA 041, and SA 091 to protect human health and the environment. For PRL S-033, the Air Force and EPA have determined that no action is required for non-VOCs in soil because a removal action has occurred to protect human health and the environment. Non-VOC hazardous substances, pollutants, or contaminants are not remaining onsite above levels that allow for unlimited use and unrestricted exposure.

The following sections provide a brief description of how the selected remedy for PRL S-014 and SA 003 (sites requiring an action) satisfies the statutory requirements of CERCLA 121 and an explanation of the five-year requirements for the sites.

2.10.1 Protection of Human Health and the Environment

The selected remedy, Alternative 3A, for PRL S-014 and SA 003 provides a high level of protection to human health and the environment because the contaminants are physically removed from the site. By excavating all the contaminated soil and properly disposing of it offsite, the selected remedy also eliminates the threat of potential exposure and migration of contamination to other media. However, under Alternative 3A, a slight risk may be posed to human health and the environment during the transportation of contaminated soil to a disposal facility, and soil is not treated prior to disposal.

2.10.2 Compliance with Applicable or Relevant and Appropriate Requirements

Section 121(d) of CERCLA states that remedial actions on CERCLA sites must attain (or justify the waiver of) any federal or more stringent State environmental standards, requirements, criteria, or limitations that are determined to be ARARs. Applicable requirements are those cleanup standards, criteria, or limitations promulgated under Federal or State law that specifically extend to the situation at a CERCLA site. A requirement is applicable if the jurisdictional prerequisites of the environmental standard

show a direct correspondence when objectively compared with the conditions at the site. The remedial actions to be accomplished based on this ROD will achieve the appropriate chemical-specific cleanup levels for protection of human health, groundwater, and surface water. Therefore the remedy will be protective of both human health and water quality, and will comply with associated ARARs. The ARARs that are relevant to the sites and the selected remedy are present in Tables 2-7 and 2-8.

2.10.3 Cost Effectiveness

In the lead agency's judgment, the selected remedy for PRL S-014 and SA 003 is cost-effective and represents a reasonable value for the money to be spent. In making this determination, the following definition was used: "A remedy shall be cost-effective if its costs are proportional to its overall effectiveness" (NCP 300.430(f)(1)(ii)(D). This was accomplished by evaluating the "overall effectiveness," of those alternatives that satisfied the threshold criteria (i.e., protective of human health and the environment and ARAR compliant). Overall effectiveness was further evaluated by assessing the balancing criteria (long-term effectiveness and permanence; reduction in toxicity, mobility, and volume through treatment; short-term effectiveness; and implementability). Overall effectiveness was then compared to costs to determine cost-effectiveness.

Tables 2-2 and 2-3 summarize detailed information needed to evaluate the cost effectiveness of the alternatives for PRL S-014 and SA 003, respectively. For each alternative, information is presented on the threshold and balancing criteria.

For PRL S-014 and SA 003, the selected remedy includes soil excavation and offsite disposal of contaminated soil. Excavation and offsite disposal reduces the volume of contamination at the site and provides an effective and permanent remedy in a short time frame. The costs include excavation and offsite disposal of the contaminated soil, restoration of the site, and sampling and analysis before, during, and after the remedial action. The total cost for Alternative 3A is the least expensive when compared to the other alternatives that attain the threshold criteria.

2.10.4 Use of Permanent Solutions and Alternative Treatment to the Maximum Extent Possible

The selected remedy provides a permanent solution for soil cleanup, but does not provide treatment of soil. Of those alternatives that are protective of human health and the environment and comply with ARARs, it has been determined that the selected remedy provides the best balance of trade-offs in terms of the five balancing criteria. However, the statutory preference for treatment as a principal element is not satisfied. The following summary describes why the selected remedy is the most appropriate solution for the site when compared with the other alternatives.

TABLE 2-7
Chemical-specific ARARs for PRL S-014 and SA 003
Initial Parcel ROD 1

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description	Comment
California Hazardous Waste Control Law (HWCL) Hazardous Waste Determination	Title 22 CCR, Division 4.5, Chapter 11, 66261.21, 66261.22(a)(1), 66261.22(a)(2), 66261.23, and 66261.24(a)(1) or Article 4, Chapter 11.	Applicable	A solid waste is considered a hazardous waste if it exhibits any of the characteristics of ignitability, corrosivity, reactivity, or toxicity, if it is listed as a hazardous waste.	The selected remedy will use the Toxicity Characteristic Leaching Procedure (TCLP) limits to verify if excavated soil is hazardous.
California hazardous waste determination	22CCR 66261.24(a)(2)	Applicable	Wastes can be classified as non-RCRA, State-only hazardous wastes if they exceed the Soluble Threshold Limit Concentration (STLC) or Total Threshold Limit Concentration (TTLC) values California hazardous wastes previously released into the environment are considered hazardous substances (CoCs) under California law. New California hazardous wastes generated in the course of the response action must be properly managed as hazardous wastes, including manifesting, storage, treatment and/or disposal.	The selected remedy will use the TCLP or STLC limits to verify if excavated soil is hazardous.
Land Disposal Restrictions	22CCR 66268.48	Applicable	Contaminated soil determined to be hazardous waste in accordance with State and Federal regulations may be subject to land disposal restrictions (LDR) if placed on land in a waste management unit following excavation. Toxicity characteristic waste needs to be treated so that it (1) no longer exhibits the characteristic of toxicity, and (2) is treated to 10 times the Universal Treatment Standard (UTS) or achieves 90 percent reduction, whichever is higher.	The selected remedy will use UTSs (times 10) to verify if excavated soil is subject to land disposal restrictions.
Response Action Criteria mandated by California Law	Health & Safety Code §25356.1.5(a)	Relevant and Appropriate [State believes this is an applicable requirement]	Approval of hazardous substance response actions shall be no less stringent than: 1) NCP requirements; 2) applicable plans and policies for water quality control adopted by State and Regional Boards under the Porter-Cologne Act; and/or requirements of Chap. 6.8 of Div. 20 of the Health and Safety Code.	State law mandates adoption of response action that is most stringent under either the NCP, Porter-Cologne Act or Chapter 6.8 (HSAA).

TABLE 2-7
Chemical-specific ARARs for PRL S-014 and SA 003
Initial Parcel ROD 1

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description	Comment
Minimum Standards for Health and Ecological Risk Assessments	Health & Safety Code §25356.1.5(b)	Relevant and Appropriate [State believes this is an applicable requirement]	Risk assessments for remedy selection must not only meet NCP requirements, but also must also include most current sound scientific methods, knowledge and practices of public health and environmental professionals.	Risk assessments must meet statutory standards to be usable as basis for remedy selection decision.
State Water Resources Control Board Resolution 92-49	State Water Resources Control Board Resolution 92-49, Section III.G	Relevant and Appropriate [State believes this is an applicable requirement]	Section III.G of this Resolution states in part that dischargers are required to clean up and abate the effects of discharges in a manner that promotes attainment of background water quality, or the best water quality which is reasonable if background levels cannot be restored.	Remedial alternatives evaluated must consider attainment of the highest water quality that is economically and technically achievable and protects beneficial uses.
Regional Water Quality Control Board's Water Quality Control Plan	Basin Plan, Chapter 2	Relevant and Appropriate [State believes this is an applicable requirement]	The Water Quality Control Plan (also known as the Basin Plan) for the Sacramento and San Joaquin River Basins, dated December 9, 1994, establishes beneficial uses for groundwater and surface water.	Establishes beneficial uses of groundwater and surface water.

TABLE 2-8
Federal and State Action-specific ARARs for PRL S-014 and SA 003
Initial Parcel ROD 1

Action	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description	Comment
Cleanup of Releases to the Environment	27 CCR 20390 (replaces 23 CCR 2550.2)	Relevant and Appropriate [State believes this is an applicable requirement]	Requires establishment of water quality protection standard consisting of a list of constituents of concern, concentration limits, and compliance monitoring points.	Applies to Class I management units.
	27 CCR 20395 (replaces 23 CCR 2550.3)	Relevant and Appropriate [State believes this is an applicable requirement	Requires specification of waste discharge requirements for constituents of concern.	Applies to Class I management units.
	27 CCR 20400 (replaces 23 CCR 2550.4)	Relevant and Appropriate	Concentration limits must be established for groundwater, surface water, and the unsaturated zone. Specific factors must be considered in setting cleanup standards above background levels.	Applies to Class I management units.
	27 CCR 20415 (replaces 23 CCR 2550.7)	Relevant and Appropriate	Requires general soil, surface water, and ground water monitoring.	Applies to Class I management units.
	27 CCR 20425 (replaces 23 CCR 2550.9)	Relevant and Appropriate [State believes this is an applicable requirement	Requires an assessment of the nature and extent of the release, including a determination of the spatial distribution and concentration of each constituent.	Applies to areas at which monitoring results show statistically significant evidence of a release.
	27 CCR 20430 (replaces 23 CCR 2550.10)	Relevant and Appropriate	Requires implementation of corrective action measures that ensure that cleanup levels are achieved throughout the zone affected by the release by removing the waste constituents or treating them in place. Source control may be required. Also requires monitoring to determine the effectiveness of the corrective actions.	Applies to groundwater remedial actions.

TABLE 2-8
Federal and State Action-specific ARARs for PRL S-014 and SA 003
Initial Parcel ROD 1

Action	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description	Comment
Treatment, Storage, or disposal of PCB wastes	40 CFR Part 761.60 to 761.79	Applicable	PCB wastes (exceeding 50 ppm) must be disposed of within 1 year after being placed in storage. Storage areas are required to be constructed to meet PCB storage requirements. If PCB wastes are stored in a manner that does not comply with the PCB storage requirements, the containers can be stored temporarily for 30 days from the date of removal.	Applicable to PCB wastes that may be generated during remediation.
Clean up of spilled PCB wastes	40 CFR 761.120 – 761.139	Relevant and Appropriate	Applies to spills that occurred after May 4, 1987. The spill policy established requirements for cleanup of spills containing 50 ppm of PCBs or greater.	The PCB spill policy is not applicable to McClellan AFB because the policy applies only to more recent spills. However, the policy is considered relevant and appropriate because it presents health-based cleanup levels for PCBs spilled into soil.
Waste Characterization and Disposal	27 CCR 20200(a)(2), (c), (replaces 23 CCR 2520, 2521)	Applicable to disposal	Requires that wastes must be characterized and if identified as hazardous (Title 23 CCR) or identified as designated nonhazardous, or inert solid waste (27 CCR 20210, 20220, 20230) be allowed only at waste management units that have been approved and classified.	Applies to wastes that are excavated and disposed of onsite. If the wastes are taken offsite they must be disposed at a waste management facility that is permitted to receive the type of waste.
	27 CCR 20210	Applicable to disposal	Requires that designated waste be discharged to Class I or Class II waste management units.	Applicable to designated waste (nonhazardous waste that could cause degradation of surface or groundwaters) disposed of onsite. If the wastes are taken offsite they must be disposed at a waste management facility that is permitted to receive the type of waste.

TABLE 2-8
Federal and State Action-specific ARARs for PRL S-014 and SA 003
Initial Parcel ROD 1

Action	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description	Comment
	27 CCR 20220	Applicable to material disposed of in the soils containment unit Applicable to onsite disposal	Requires that nonhazardous solid waste be discharged to a classified waste management unit.	Nonhazardous wastes generated as part of the remedial action will need to be discharged to a classified unit (e.g., the soils containment unit or appropriate offsite landfill). If the wastes are taken offsite they must be disposed at a waste management facility that is permitted to receive the type of waste.
	27 CCR 20230	Applicable to on site disposal	Requires that inert waste does not need to be discharged to classified units. Inert waste is waste that does not contain hazardous waste or soluble pollutants at concentrations in excess of applicable WQOs.	Applicable to waste classified as inert (it no longer contains hazardous waste or soluble pollutants that would impact groundwater above applicable WQOs) that is disposed of onsite. If the wastes are taken offsite they must be disposed at a waste management facility that is permitted to receive the type of waste.
Control of Air Emissions	Sacramento Metropolitan Air Quality Management District, Regulation 4, Rule 403, Fugitive Dusts	Applicable	Limits visible particulate emissions to the property line.	Applicable to remedial actions that may result in the production of fugitive dust.

TABLE 2-8
Federal and State Action-specific ARARs for PRL S-014 and SA 003
Initial Parcel ROD 1

Action	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description	Comment
Container Storage	22 CCR 66264.171, 172, 173, 174	Applicable	Containers of RCRA hazardous waste must: – Be maintained in good condition. – Be compatible with hazardous waste to be stored. – Be closed during storage except to add or remove waste. – Have adequate secondary containment when stored onsite.	These requirements are applicable to hazardous wastes that are generated and stored temporarily in containers at the site prior to offsite disposal and may include wastes such as soil, debris, or treatment residuals(water, sludge, filters).
	22 CCR 66264.175 (a) and (b)	Applicable	Place containers on a sloped, crack-free base, and protect from contact with accumulated liquid. Provide a containment system with a capacity of 10 percent of the volume of containers with liquids. Remove spilled or leaked waste in a timely manner to prevent overflow of containment system.	These requirements are applicable to hazardous wastes that are generated and stored temporarily in containers at the site prior to offsite disposal.
	22 CCR 66262.30 through 66262.33	Applicable	Prior to transportation, containers would be packaged, labeled, marked, and placarded in accordance with RCRA and Department of Transportation requirements.	These are applicable requirements for containers that are used to contain hazardous wastes that are sent offsite for disposal.
Hazardous Waste Accumulation	22 CCR 66262.34	Applicable	Accumulation of hazardous wastes onsite for longer than 90 days would be subject to RCRA requirements for storage facilities.	These requirements are applicable to hazardous waste that is stored temporarily onsite prior to offsite disposal.
Excavation	22 CCR 66268.40	Applicable	Movement of excavated materials characterized as hazardous to new location or placement in or on land will trigger LDRs for the excavated.	Applicable if excavated soil and waste characterized as hazardous waste is placed on land (e.g., accumulation of soil prior to disposal).
Corrective Action (Temporary Units)	22 CCR 66264.553	Applicable	For temporary tanks and container storage areas used for treatment or storage of hazardous remediation waste during corrective action activities, it may be determined that a design, operating, or closure standard applicable to such units may be replaced by alternative requirements that are protective of human health or the environment. The temporary unit may be in place for one year with the possibility of a one-year extension.	This provision would allow for temporary treatment or storage of hazardous waste that is excavated, stored, and treated at McClellan.

TABLE 2-8
Federal and State Action-specific ARARs for PRL S-014 and SA 003
Initial Parcel ROD 1

Action	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description	Comment
Corrective Action (Staging Piles)	40 CFR 264.554	Applicable	During corrective action, remediation waste can be placed in piles without triggering LDRs or MTRs. Must not operate for more than 2 years and must be designated by appropriate agencies.	This provision would allow for temporary storage of remediation wastes characterized as hazardous before and/or after treatment.
Disposal	22 CCR 66268	Applicable	Compliance with LDR treatment standards is required if hazardous waste (e.g., contaminated soil) is placed on land. Soil treatability variance may be invoked according to 40 CFR 268.44 (h)(3) and (4).	LDRs must be met for wastes excavated and then placed in an area outside of a CAMU, treatment unit, or staging pile.
Regional Water Quality Control Board's Water Quality Control Plan	Basin Plan, Chapter 2	Relevant and Appropriate [State believes this is an applicable requirement]	The Water Quality Control Plan (also known as the Basin Plan) for the Sacramento and San Joaquin River Basins, dated December 9, 1994, establishes beneficial uses for groundwater and surface water.	Establishes beneficial uses for groundwater and surface water.
Surface and groundwater cleanup	State Water Resources Control Board Resolution 92-49, Section III.G	Relevant and Appropriate [The State believes it is Applicable]	Section III.G of this Resolution states in part that dischargers are required to clean up and abate the effects of discharges in a manner that promotes attainment of background water quality, or the best water quality which is reasonable if background levels cannot be restored.	Remedial alternatives evaluated must consider attainment of the highest water quality that is economically and technically achievable and protects beneficial uses.
Surface and groundwater cleanup	40 CFR Parts 122, 123, 124, National pollution discharge elimination system, implemented by State Water Resources Control Board Order 92-08 DWQ	Applicable	Regulates pollutants in discharge of storm water associated with construction activity (clearing, grading, or excavation) involving the disturbance of 1 acre or more. Requirements to ensure storm water discharges do not contribute to a violation of surface water quality standards.	Applicable to discharge of stormwater from areas where excavation or stockpiling of soils may occur.

2.10.5 Long-term Effectiveness and Permanence

The selected remedy includes physically removing the contaminated soil from the site, and properly disposing it offsite without treatment. For Alternative 3A, long-term O&M will not be required at PRL S-014 and SA 003 because contaminants at concentrations that pose risks to human health or the environment are entirely removed from each site. Site specific monitoring and long-term institutional controls to prevent the possibility of impacts to human health and the environment are not required.

2.10.6 Reduction of Toxicity, Mobility, or Volume Through Treatment

The selected remedy effectively reduces the toxicity, mobility, and volume of contaminants at each site by excavation and offsite disposal at a landfill, not through treatment. Through landfill disposal, the mobility of the waste is reduced because it is placed in an engineered cell. Prior to placing the waste in the cell, treatment may be employed to reduce mobility and toxicity of contaminants in soil, although this is not likely because the contaminant concentrations are relatively low at the sites.

2.10.7 Short-term Effectiveness

The selected remedy presents a potential for short-term exposure from the excavation and offsite disposal of contaminated soil. When excavating, construction workers are temporarily exposed to disturbed soils. Alternative 3A also requires contaminated soil to be transported a significant distance for disposal, which may expose the surrounding community and environment to contamination through fugitive dust. Appropriate measures will be adhered to during the remedial action to minimize exposure.

2.10.8 Implementability

The excavation and disposal components of the selected remedy are readily implementable and reliable. Excavation is a commonly understood and well-proven method of removing contaminated surface and subsurface materials. Equipment and construction methods appropriate to the excavation and handling of contaminated materials are readily available.

2.10.9 Costs

The selected remedy is cost effective. For PRL S-014, the total cost to achieve virtually the same end result is nearly six-times as costly for Alternative 5 when compared to Alternative 3A, although Alternative 5 does use onsite treatment in conjunction with excavation. Alternative 2, although less costly than Alternative 5 but more costly than Alternative 3A, is the use of institutional controls that will be required in perpetuity to protect human health and the environment because contaminants are left in place.

For SA 003, Alternative 3B is more costly than Alternative 3A. Although both alternatives include excavation of contaminated soil, under Alternative 3B, residual contamination is left in place, which will require implementing long-term institutional controls to prevent the possibility of impacts to human health and the environment.

Therefore, Alternative 3A for PRL S-014 and SA 003 is the least expensive when compared to the other alternatives.

2.10.10 State Acceptance

Generally, the State believes Alternative 3A is better than Alternative 2 because it costs substantially less and remediates the contamination.

2.10.10.1 Community Acceptance

A public comment period on the Proposed Plan was held from September 15 through October 15, 2003, and a public meeting was held on September 30, 2003. Public comments were received (see the Responsiveness Summary in Section 3). The public comments indicate no disagreement with the Air Force's selected remedies.

2.10.11 Preference for Treatment as a Principal Element

There is no source material(s) posing a principal threat at the sites addressed in this ROD, and EPA's statutory preference for treatment of principal threats does not apply to the sites (NCP 300.430(a)(1)(iii)(A). In addition, the selected remedy does not include treatment as a principal element. Based on reported data, relatively low levels of contamination in the soil are present at the sites; therefore, the soil will not likely be considered hazardous waste. Consequently, treatment prior to placement in an offsite landfill would not necessarily be required. For PRL S-014, the alternative including treatment as a principal element (Alternative 5) is nearly six-times as costly as the selected remedy (Alternative 3A). A treatment alternative was not evaluated for SA 003 because the site includes a mix of metal and organic contaminants, thereby complicating the treatment required and increasing costs.

2.10.12 Five-year Review Requirements

Because the selected remedy will not result in hazardous substances, pollutants, or contaminants remaining onsite above levels that allow for unlimited use and unrestricted exposure, a 5-year review will not be required for this remedial action. However, if the remedial action has not been implemented or the RAOs have not been attained within 5 years, the next 5-year review would include a review of these sites. Specifically, the Technical Assessment for each site would ascertain what actions are still required and whether the remedy is protective of human health and the environment. In the event the remedial action cannot achieve the ROD RAOs, an amendment to the ROD or a ROD Explanation of Significant Differences (ESD) would be performed to resolve the discrepancy.

2.11 Documentation of Significant Changes

Subsequent to completing the Initial Parcel FS #1 and at the request of the State, the Air Force performed a limited excavation of soil during additional characterization of the elevated arsenic and bis2CEE detections at SA 035. This work was performed during December 2003 and is documented in an addendum to the Initial Parcel FS #1. Analytical results support the selection of the No Action alternative for this site and are discussed in Section 2.4.4.4.

2.12 Works Cited

California EPA and EPA National Center for Environmental Assessment. 2000. Cancer Potency Factors.

CH2M HILL. 1997. Base Realignment and Closure Cleanup Plan

CH2M HILL. 2003. Initial Parcel FS Data Gaps Investigation in 2002 (Appendix E. Initial Parcel FS #1).

IRP. 1992. *OU A Remedial Investigation Sampling and Analysis Plan.* Section 3 of FSP, Volume 2.

Jacobs. 1995. RI Interim Basewide Final Report, Site Characterization Summary and Field Sampling Plan Part 2A, OU A, IC 26. November.

Jacobs. 2000. *Operable Units E-H Remedial Investigation Characterization Summaries.*

Jacobs. 2001. *Operable Unit A Remedial Investigation Characterization Summaries.* Final. September.

Jacobs. 2002. *Operable Unit A Remedial Investigation Characterization Summaries Addendum.*

LRA Engineering. 1996. UST Tank Removal Report, PRL S-014 (Bldg. 22).

McClellan EM. 1990. Memorandum, Site Investigation, PRL S-040.

Office of Emergency and Remedial Response. October.

Radian. 1991 OU B Preliminary Assessment.

Radian. 1991. OU B Soil Gas Data Summary.

Radian. 1991. OU A Preliminary Assessment.

Radian. 1994. "*Basewide Background Study.*" Technical Memorandum. February.

Radian. 1995. *OU B Remedial Investigation Characterization Summaries.*

Radian. 1995. *OU E-H Preliminary Assessment, McClellan.*

RWQCB. 1996. "No Further Action" Tank Closeout Letter for SA 035, Building 20 (1 Tank).

RWQCB. 2000. "No Further Action" Tank Closeout Letter for PRL S-014, Building 22 (2 Tanks).

URS. 2002c. *Technology Application Analysis Report, Ex Situ Thermal Desorption Treatability Study.* Draft Final. March 19.

URS. 2002. *OU B Phase 1 POL/SSG Remedial Investigation Characterization Summaries Addenda for Selected Sites,* Vol. 1,2. Working Copy.

URS. 2003. *OU A Vadose Zone Quarterly Monitoring Report.*

EPA. 1988. Guidance for Conducting Remedial Investigation and Feasibility Studies under CERCLA. OSWER Directive 9355.3-01.

EPA. 2000. A Guide to Developing and Documenting Cost Estimates During the Feasibility Study. OSWER 9355.0-75

U.S. Office of Management and Budget. 2002. Circular A-94, Appendix C. February.

Weston/Kleinfelder. 2001. *Final Soils Staging Pile Facility 100% Design Work Plan.* April.

Weston/Kleinfelder. 2002. *Removal Action Report PRL S-033.* Final.

SECTION 3

The Responsiveness Summary

3.0 Stakeholder Issues and Air Force Responses

The Proposed Plan for Soil Cleanup at Seven Sites was available for review during a 30-day public comment period from September 15 through October 15, 2003. A public notice announced the start of the public comment period. The Plan was available for review at the McClellan Information Repository and web site for the Air Force Real Property Agency, McClellan Operating Location. In addition, a public meeting was held on September 30, 2003 to explain the Proposed Plan, and to solicit comments from the public. The public was encouraged to review the document and provide comments, either orally or in writing, about the cleanup alternatives presented in the Proposed Plan.

A proposed plan and public comment period is a key part of the decision-making process as the Air Force uses community input in selecting a cleanup decision.

The Air Force received comments from two members of the public during the public comment period. Mr. Gary Collier provided comments orally at the public meeting and Mr. Paul Green provided written comments. Mr. Collier and Mr. Green are community members of the McClellan Restoration Advisory Board. Their comments and the Air Force responses are provided below. The public comments did not result in modification of the preferred cleanup alternatives presented in the Proposed Plan.

I. Comments Received from September 30, 2003 Public Meeting:

Mr. Gary Collier: "The other aspect of the question was these are pretty simple sites, by that I mean they are basic. But I'm concerned that the cleanup aspects may be used as a precedent for the really tough ones. There are some really bad sites out there. And there is also some discussions of the landfills which we encamped. Can this be used as a precedent since they also talk about using the Mather based stock use?"

Air Force Response: This Record of Decision deals only with the following seven sites; PRL S-014, PRL S-033, SA 003, SA 035, SA 041, SA 091, PRL S-040. It is not a basewide Record of Decision. Other sites will be dealt with in future Records of Decision, to determine cleanup remedies for each specific site. Future Records of Decision will deal with more contaminated sites, to include landfills. This Record of Decision does not set precedent for the cleanup levels of other sites to be dealt with in the future.

Mr. Gary Collier: "Basically, like I indicated, I don't see any major problems with these particular sites. But I just have some concerns that I will probably put in writing at a later date. But I would like to get some more information as questions come up. But I would like to take this time just to let people in the audience know that regarding – not regarding this aspect, but I just got information that the Air Force is going to be getting some monies to do the sewer project on the base and that's going to hopefully speed up some of the processes out there. And it went to Senator Feinstein and Senator Matsui's office. They both had a great deal to do with it as well as Congressman Ose's office."

Air Force Response: These comments are noted, but do not apply to the seven sites in this Record of Decision.

II. Comments Submitted in writing to AFRPA during the comment period:

Mr. Paul Green: The CERCLA process is no more than a management decision-making process – nothing magic in and of itself. The problem is with the management system.

The only way it appears people inside the system can justify being in the system is calling upon the system. The system is circular and therefore justifies itself. It is possible to justify any good idea in a vacuum but it's impossible to justify a better idea if it's all done within the same environment.

The value CERCLA provides is too encumbered with process; the process is too cumbersome. The CERCLA process falls on itself because it is too heavy.

CERCLA has an over-abundance of coordination. Those who are coordinating the CERCLA process (i.e., AFRPA) are too conservative. While erring on the side of safety can be fine, AFRPA is too constricting in its implementation.

Unless there is a health problem defined in the process, the rest of the steps need to get out of the way. For example, if a regulatory action limit is 5 ppb and a sample result is 6 ppb, what is the difference? What is the relevance to human health? It is a waste of people's time to achieve the smaller limit. Can't see quibbling over ppb action levels (unless the contaminant is egregious.) AFRPA and the regulators shouldn't try to get to zero.

Cleanup costs are comprised of the actual physical cost to remediate contamination PLUS the indirect costs of program implementation (e.g., tracking and staff payrolls). Both costs should be expressed when total cost of an action is considered. All indirect costs of a project should also be expressed. The system fails when the community doesn't get to determine how many people are on the payroll. In addition to the cost of a project, we must also consider what we are losing every year when things aren't being done (e.g., lost jobs, lost tax revenue.)

At McClellan, there have been delays with defining the problem, listing assumptions, listing factors that bear on the problem, developing alternatives and then selecting one. There is no rhyme or reason for how we are cleaning up at McClellan. Over the last two years, there has not been a lot of accomplishment or effectiveness in terms of turning deeds over to MP [McClellan Park]. This is necessary for additional sales and leases, which means more jobs and a greater tax base in the community.

The cost of remediating site [PRL S-014] where the PCB transformers leaked is offensive. Also, what is the relevance of the aggregate piles? Who wants them?

$400M spent already and we aren't even scheduled to complete remediation until 2034 and 2050. There does not appear to be a plan to get there.

Management philosophy says the lowest level that has all of the information should make the decision. If all decisions are made at the Air Force level, that is rough. We have the tale waging the dog – local Air Force should begin working for the local community. Decisions should be made focusing on reuse as being the mission.

The community would like to compare all the items at McClellan, not just the 7 parcels in the Initial Parcel. The community doesn't get a chance to prioritize because there isn't anything else to prioritize against.

Involve the community BEFORE actual decisions are made but AFTER the alternatives have been provided because the alternatives address what the community should decide. This should occur AFTER environmental scrutiny has occurred. The community's role is not to oversee, recommend, or advise the Water Board or EPA on technical matters. The community wants to focus on alternatives and the cost of those alternatives that impact the community (noise, light, highways cut off, affect on schools).

We know we can't do all cleanup all at one time due to limited funding and landfill limitations, but we need to improve and increase the amount of land available for reuse. That's the problem.

From a layperson's perspective if it takes that long to do it, then they are scrutinizing too much OR they are overloaded OR too many things go up the process that don't need to. Also, you shouldn't operate from the perspective that "you might lose your birthday just because you were wrong."

Air Force Response: The comments about the lengthy, bureaucratic nature of CERCLA are noted and appreciated. CERCLA is the law that sets forth the requirements on how investigation and cleanup are to be completed. It can be a lengthy process, but the Air Force works with the U.S. Environmental Protection Agency and the State of California to prioritize cleanup needs, select the best remedy and facilitate reuse. Cleanup decisions are based on a wide variety of factors, including potential risk to human health and the environment, and a technologic and economic feasibility analysis.

The cleanup program at McClellan is evolving from purely cleanup, to cleanup and reuse. As the program evolves and progresses, priorities shift and schedules change. This can largely be attributed to new information. The Air Force must first completely identify and quantify the scope of the contamination at an IRP site and evaluate various cleanup alternatives before it can arrive at a final cleanup solution, or a Record of Decision in CERCLA terms. A Record of Decision is a key step in the process of transferring property.

The Air Force has installed many remedies throughout the base that are actively cleaning up sites and ensuring that human health and the environment are being protected. Examples include ongoing groundwater treatment, soil vapor extraction and soil excavation. These ongoing cleanup remedies not only set the stage for future property transfer, but also help current reuse efforts by containing, reducing and eliminating potential risks associated with the contamination.

Significant progress has been made in terms of environmental cleanup, reuse of the property and facilities at McClellan and property transfer. To date, more than 5,000 jobs have been created at McClellan and nearly 80 percent of McClellan is available for reuse via lease. The Air Force has deeded 275 acres to the community, with an additional 96 acres scheduled to be transferred in Spring 2004 under the Initial Parcel Finding of Suitability for Transfer (FOST).

For this Proposed Plan, the Air Force and EPA have chosen the most cost-effective cleanup alternative for sites SA 003 and PRL S-014. Alternative 2 is more expensive than removing the contamination due to the cost of institutional controls (managing the contamination left in place over time). For each of the remaining sites, Alternative 1 was selected, because the Air Force and EPA have determined that no cleanup actions need to be taken. There are no cleanup costs associated with this alternative, while allowing unrestricted use of the site.

3.1 Technical and Legal Issues

There are no outstanding technical or legal issues not addressed in the Decision Summary (Section 2).

SECTION 4

References

The following site-specific list of references represent the primary source documents associated with each site. These site characterization references make up "Roadmap #1" for each site. In addition to these primary references, a site-specific Administrative Record (AR) Index Listing is provided at the back of this section. This AR listing provides in chronological order, all stored documents associated with the specific site. In addition, specific references for each site are provided in Section 2.4 prior to the summary of the site characterization data.

4.0 Site Specific References

4.0.1 PRL S-014

CH2M HILL. 1981. *IRP Records Search for McClellan Air Force Base.* July.

McLaren. 1986. *Basewide Report on Contamination, McClellan Air Force Base, Sacramento, California.* Final.

McLaren. 1986. *Basewide Source Control Feasibility Study and Remedial Action Plan.* Final. December.

Radian. 1991. *IRP Stage 3, Preliminary Assessment for PRL S-014 for McClellan AFB/EM.* February.

Jacobs. 1992. *IRP OU A RI Sampling and Analysis Plan, Section 3, FSP,* Vol. 2, May.

Jacobs. 1995. *IRP OU A Interim Basewide RI Final Part 2A – SCS, FSP,* November.

LRA Engineering. 1996. *McClellan AFB Tank Site 22.* March.

Jacobs. 1999. *IRP Basewide Data Gap Field Sampling Plan – 3.* Final. March.

Air Force. 2000. Building 22 Underground Storage Tanks (UST), Memo for RWQCB. August.

CVRWQCB. 2000. No Further Action Letter, USTs at Building 22, McClellan AFB. August.

CH2M HILL. 2000. *Non-VOC Feasibility Study.* August.

URS. 2000. Site-Specific Supplemental Environmental Baseline Survey, Group 6 Facilities. Final. December.

Jacobs. 2001. *IRP McClellan AFB Operable Unit (OU) A Part 2A – Interim Basewide RICS,* Vol. 1. September.

Jacobs. 2002. *IRP McClellan AFB OU A RICS Addendum.* Final. March.

CH2M HILL. 2003. *LRA Initial Parcel Feasibility Study #1* (7 Sites) App G, H. Final. August.

4.0.2 PRL S-033

Radian. 1991. *IRP Stage 3, OU B PA Summary Report McClellan AFB/EM.* Final. October.

Radian. 1991. *IRP Stage 3, OU B PA Summary Report* Vol. II, App B. Final. October.

Radian. 1991. *IRP Stage 7, OU B Remedial Investigation SAP McClellan AFB/EM.* Final. November.

Radian. 1991. *IRP Stage 7, OU B Soil Gas Investigation Data Summary 2.* Draft. February.

Radian. 1994. *PA/SI Technical Summary Report.* Final. September.

Radian. 1995. *IRP Interim Basewide RI, Part 2B, RICS, Vol. 1,2,4, and 8 of 9.* Final. December.

Radian. 1998. *IRP McClellan AFB Data Gap Field Sampling Plans-2.* Final. September.

CH2M HILL. 1999. *McClellan AFB Basewide VOC Feasibility Study Report, Vol. 3 of 3.* Final. December.

Radian. 2004. *IRP McClellan AFB OU B RICS Addendum*. Final.

R.F. Weston/Kleinfelder. 2002. *Removal Action Report, PRL S-033.* Final. April.

URS. 2002. IRP Interim Basewide RI Report OU B – RICS and Addendum, Vol. 2 of 4. July.

CH2M HILL. 2003. *LRA Initial Parcel Feasibility Study #1* (7 Sites) Appendix H. Final. August.

4.0.3 PRL S-040

Radian. 1995. *OU E-H Preliminary Assessment, McClellan.* Final. January.

Radian. 1997. *OU E-H Field Sampling Plans.* Final. April.

Jacobs. 2000. *Parts 2E-2H RICS* Vol. 2. Final. March.

CH2M HILL. 2003. *LRA Initial Parcel Feasibility Study #1* (7 Sites) Appendix H. Final. August.

4.0.4 SA 003

Air Force. 1987. McClellan AFB Environmental Compliance Files, Analytical Data.

EG&G Idaho. 1988. *Industrial Wastewater Collection System Characterization Report.* May.

Radian. 1991. *IRP McClellan AFB, OU B Soil Gas Investigation Data Summary.* February.

Radian. 1991. *IRP Stage 3, OU B Preliminary Assessment Summary Report,* Final. October.

Radian. 1991. *IRP Stage 7, OU B Remedial Investigation SAP McClellan AFB/EM.* Final. November.

Radian. 1993. *IRP Stage 7, OU B Remedial Investigation SAP Addendum FSPs.* Final. April.

Radian. 1995. *IRP McClellan AFB Interim Basewide RI, Part 2B, RICS.* Final. December.

Radian. 1999. *Data Gap Field Sampling Plan – 2* Final. July.

Radian. 1999. *Data Gap Field Sampling Plan – 4* Final. July.

URS. 2002. *IRP McClellan AFB Interim Basewide RI Report OU B – RICS and Addendum.* Final. July.

URS. 2002. *Field Sampling Plan for POL/SSG at Selected Sites.* November.

URS. 2002. *OU B Phase 1 POL/SSG RICS Addenda for Selected Sites,* Vol. 1,2. WC. July.

CH2M HILL. 2003. *LRA Initial Parcel Feasibility Study #1* (7 Sites) Appendix H. Final. August.

4.0.5 SA 035

Air Force. 1989. EM Spill Response Checklist/report for Building 20. September.

Radian. 1991. *IRP OU Preliminary Assessment,* App D. February.

Jacobs. 1992. *IRP OU A Remedial Investigation Sampling and Analysis Plan,* Vol. 2, May.

Jacobs. 1995. *IRP OU A Interim BW RI Final Part 2A – SCS/FSP,* November.

Jacobs. 1995. OU A, B, C, D Basewide Eco RA, Tech Memo, Scoping Summary Report. December.

CVRWQCB. 1996. No Further Action Letter, UST at Building 20, McClellan AFB. July.

Jacobs. 1998. *Part 2A: OU A RICS for IC 25.* Final. October.

Jacobs. 2001. *Part 2A: OU A RICS for IC 26.* Final. September.

Jacobs. 2002. *IRP McClellan AFB OU A RICS Addendum.* Final. March.

CH2M HILL. 2003. *LRA Initial Parcel Feasibility Study #1* (7 Sites) App G, H. Final. August.

4.0.6 SA 041

Radian. 1991. *IRP Stage 3, OU A Preliminary Assessment Summary Report,* Vol. 4, App D. February.

Jacobs. 1992. *IRP OU A Remedial Investigation Sampling and Analysis Plan,* Vol. 2, May.

Jacobs. 1992. Interview Database Record, Site Investigation Checklist. December.

Jacobs. 1995. *OU A Interim BW RI Final Part 2A – SCS/FSP,* November.

Jacobs. 1995. *OU A, B, C, D Basewide Eco RA, Tech Memo, Scoping Summary Report.* December.

Radian. 1997. *Interim Basewide RI Report, Part 1, General Framework,* Vol. 2, App K. June.

Jacobs. 1998. *Part 2A: OU A RICS for IC 26.* Final. October.

Jacobs. 1998. *Part 2A: OU A RICS for IC 26.* Final. November.

CH2M HILL. 1999. *McClellan AFB Basewide VOC Feasibility Study Report,* Vol. 3 of 3. Final. December.

URS. 2000. *Site-Specific Supplemental Environmental Baseline Survey for Group 6 Facilities.* Final. December.

Jacobs. 2001. *Part 2A: OU A RICS for IC 26.* Final. September.

CH2M HILL. 2003. *LRA Initial Parcel Feasibility Study #1* (7 Sites) App G, H. Final. August.

4.0.7 SA 091

Air Force. 1988. Letter from Ray Burgiss regarding soil removal following solvent spill. March.

Air Force. 1989. *Spill Report, Bay A in Building 621.* October.

Radian. 1991. *IRP Stage 3, OU A Preliminary Assessment Summary Report,* Vol. 4, App D. February.

Jacobs. 1992. *IRP OU A Remedial Investigation Sampling and Analysis Plan,* Vol. 2, May.

Jacobs. 1992. Interview Database Record, Site Investigation Checklist. December.

Jacobs. 1995. *OU A Interim Basewide RI Final Part 2A – SCS, FSP,* November.

Jacobs. 1995. *OUs A, B, C, D Basewide Eco RA, Tech Memo, Scoping Summary Report.* December.

Jacobs. 2001. *Part 2A: OU A RICS for IC 43,* Vol. 3. Final. September.

CH2M HILL. 2003. *LRA Initial Parcel Feasibility Study #1* (7 Sites) App G, H. Final. August.

4.1 Administrative Record Index Former McClellan AFB, California

Following are the administrative records for sites PRL S-014, PRL S-033, PRL S-040, SA 003, SA 035, SA 041, and SA 091

Administrative Record for PRL S-014

McClellan AFB, CA - AR DOCUMENTS
Date of Report: 9/19/03

DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
20 Jul 89	CDHS Memo Concerning Recommendations for Work Plan	Welker, Molly California Department of Health Services	1405 CD 6
Aug 90	RI/FS, Stage 4, Planning Network Report	Radian, Corp.	1567 CD 10
Nov 90	Fact Sheet, The Facts, OU-A, No 5	SM-ALC/PA	1605 CD 11
08 Mar 91	CRWQCB Letter to Base Concerning PA Summary Report, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	1679 CD 7
11 Apr 91	EPA Letter to Base Concerning Comments on PA Report, OU-A	Mitani, Lewis EPA Region IX	1695 CD 7
23 Apr 91	CDHS Letter to Base Concerning Comments on PA Report, OU-A	Landis, Anthony J California Department of Health Services	1696 CD 7
01 Jul 91	CRWQCB Letter to Base Concerning Preliminary Summary Report, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	1733 CD 12
12 Jul 91	CDHS Letter to Base Concerning Draft PA Summary Report, OU-A	Wang, David California Department of Health Services	1740 CD 11
23 Jul 91	EPA Letter to Base Concerning PA Summary Report, OU-A	Mendoza, Ramon C EPA Region IX	1742 CD 11
27 Jul 91	Base Letter to EPA Concerning Response to Comments on PA Report, OU-A	Hoda, Badrul SM-ALC/EM	1745 CD 12

McClellan AFB, CA - AR DOCUMENTS
Date of Report: 9/19/03

DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
14 Aug 91	Base Letter to EPA Concerning Draft Soil Vapor Summary Report	Thorpe, Charles J D SM-ALC/EM	1757 CD 20
02 Jan 92	Base Letter to EPA Concerning SAP, OU-A	Slavich, Francis E, Capt SM-ALC/EMR	3139 CD 18
08 Jan 92	CRWQCB Letter to Base Concerning Comments on Site Grouping Phase Memorandum and QAPP, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	2949 CD 17
Feb 92	ROD, Final, Stage 3, No Further Action, OU-A	Radian, Corp.	1779 CD 20
19 May 92	CRWQCB Letter to Base Concerning Comments on RI, Draft SAP, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	1905 CD 8
01 Jul 92	EPA Letter to Base Concerning Comments on RI, Draft SAP, OU-A	Moore, Katherine EPA Region IX	1921 CD 8
Sep 92	RI, Final SAP, Vol I, OU-A	Jacobs Engineering Group, Inc.	1883 CD 8
30 Sep 92	EPA Letter to Base Concerning Review of Draft Final SAP, OU-A	Moore, Katherine EPA Region IX	2017 CD 8
19 Nov 92	CRWQCB Letter to Base Concerning UST Program and Addition of Sites	MacDonald, Alexander M California Regional Water Quality Control Board	2042 CD 8
Jul 94	Working Draft Technical Memorandum, UST Closure Certification	Radian Corp.	2367 CD 13

McClellan AFB, CA - AR DOCUMENTS
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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
10 Aug 94	CRWQCB Letter to Base Concerning Comments on Basewide Ecological Risk Assessment Draft Scoping Report, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	2415 CD 8
16 Sep 94	CRWQCB Letter to Base Concerning Draft Final Scoping Report for Basewide Ecological Risk Assessment, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	2443 CD 15
23 Sep 94	CDTSC Letter to Base Concerning Comments on Scoping Report for Basewide Ecological Risk Assessment, OU-A	Harris, John California Department of Toxic Substances Control	2446 CD 15
Oct 94	Basewide Ecological Risk Assessment Final Scoping Report, OU-A	Jacobs Engineering Group, Inc.	2472 CD 21
13 Oct 94	CRWQCB Letter to Base Concerning Draft UST Closure Certification Report	MacDonald, Alexander M California Regional Water Quality Control Board	2463 CD 13
01 Nov 94	CRWQCB Letter to Base Concerning Comments on Draft Site Characterization Summaries, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	2479 CD 13
02 Dec 94	CDTSC Letter to Base Concerning Comments on Final Ecological Risk Assessment Scoping Report, OU-A	Harris, John California Department of Toxic Substances Control	2504 CD 14
May 95	RI, Interim Basewide Draft Report, Site Characterization Summary and FSP, Part 2A, Vol I of VI, OU-A	Jacobs Engineering Group, Inc.	2634 CD 14
May 95	RI, Interim Basewide Draft Report, Site Characterization Summary and FSP, Part 2A, Vol II of VI, OU-A	Jacobs Engineering Group, Inc.	2635 CD 14

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
May 95	RI, Interim Basewide Draft Report, Site Characterization Summary and FSP, Part 2A, Vol III of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2636 CD 15
May 95	RI, Interim Basewide Draft Report, Site Characterization Summary and FSP, Part 2A, Vol IV of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2637 CD 15
May 95	RI, Interim Basewide Draft Report, Site Characterization Summary and FSP, Part 2A, Vol V of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2638 CD 15
May 95	RI, Interim Basewide Draft Report, Site Characterization Summary and FSP, Part 2A, Vol VI of VI, Appendices B-D, OU-A	Jacobs Engineering Group, Inc.	2639 CD 15
30 Jun 95	EPA Letter to Base Concerning Comments on Interim RI Basewide Draft Report Part 2A, OU-A	Healy, Joseph B, Jr EPA Region IX	2674 CD 15
03 Jul 95	CRWQCB Letter to Base Concerning Comments on RI Draft FSP, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	2680 CD 15
05 Jul 95	CDTSC Letter to Base Concerning Comments on Draft Site Characterization Summaries and FSP, OU-A	Malinowski, Mark California Department of Toxic Substances Control	2682 CD 15
27 Sep 95	CRWQCB Letter to Base Concerning Comments on Draft Final RI FSP, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	2758 CD 15
27 Sep 95	CDTSC Letter to Base Concerning Comments on Draft Final Site Characterization Summaries and FSP, OU-A	Malinowski, Mark California Department of Toxic Substances Control	2759 CD 15

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
12 Oct 95	EPA Letter to Base Concerning Comments on Draft Final Site Characterization Summary and FSP, OU-A	Healy, Joseph B, Jr EPA Region IX	2775 CD 16
Nov 95	RI, Interim Basewide Final Report, Site Characterization Summary and FSP, Part 2A, Vol I of VI, OU-A	Jacobs Engineering Group, Inc.	2795 CD 16
Nov 95	RI, Interim Basewide Final Report, Site Characterization Summary and FSP, Part 2A, Vol II of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2796 CD 16
Nov 95	RI, Interim Basewide Final Report, Site Characterization Summary and FSP, Part 2A, Vol III of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2797 CD 16
Nov 95	RI, Interim Basewide Final Report, Site Characterization Summary and FSP, Part 2A, Vol IV of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2798 CD 16
Nov 95	RI, Interim Basewide Final Report, Site Characterization Summary and FSP, Part 2A, Vol V of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2799 CD 16
Nov 95	RI, Interim Basewide Final Report, Site Characterization Summary and FSP, Part 2A, Vol VI of VI, Appendices B-D, OU-A	Jacobs Engineering Group, Inc.	2800 CD 16
16 Nov 95	Base Memo Concerning Final Site Characterization Summary and FSP Submittal, OU-A	Schmalz, Kirk L SM-ALC/EMR	2815 CD 16
19 Dec 95	CRWQCB Letter to Base Concerning Comments on Final Basewide Ecological Risk Assessment Summary Scoping Report	MacDonald, Alexander M California Regional Water Quality Control Board	2859 CD 17

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
14 Feb 96	CDTSC Letter to Base Concerning CDTSC Comments on Final Basewide EA Summary Scoping Report, OU-A, OU-B, OU-C, OU-D	Malinowski, Mark California Department of Toxic Substances Control	3032 CD 17
03 Oct 96	CRWQCB Letter to Base Concerning Phase II RI/FS, FSP Report, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	3182 CD 18
Nov 96	RI, Draft Interim Basewide Report, Revision 1	Radian, Corp.	3198 CD 18
03 Apr 97	CRWQCB Letter to Base Concerning Comments on RI, Draft Final Interim Basewide Report, Revision 1	MacDonald, Alexander M California Regional Water Quality Control Board	3319 CD 18
30 Apr 97	EPA Letter to Base Concerning Comments on Removal Action Work Plan, Basewide SVE	Chang, James EPA Region IX	3337 CD 18
07 May 97	Base Letter to Regulators Concerning Appropriate Modeling to Determine Potential Water Quality Impacts From Metals Contaminated Soil	Anderson, Elaine S SM-ALC/EMR	3339 CD 18
14 May 97	EPA Letter to Base Concerning Letter on Appropriate Modeling to Determine Potential Water Quality Impacts From Metals Contaminated Soil	Healy, Joseph B, Jr EPA Region IX	3342 CD 18
27 May 97	CRWQCB Letter to Base Concerning Comments on Appropriate Modeling to Determine Potential Water Quality Impacts From Metals Contaminated Soils	MacDonald, Alexander M California Regional Water Quality Control Board	3348 CD 18
28 May 97	CRWQCB Letter to Base Concerning Comments on Appropriate Modeling to Determine Potential Water Quality Impacts From Metals Contaminated Soils	MacDonald, Alexander M California Regional Water Quality Control Board	3349 CD 18

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
Jun 97	Final Ecological Risk Assessment Strategy Report	Radian, Corp.	3354 CD 19
Jun 97	RI, Final Interim Basewide Report, Part 1, Vol I of II, Revision 1	Radian, Corp.	3355 CD 19
Jun 97	RI, Final Interim Basewide Report, Part 1, Vol II of II, Appendices, Revision 1	Radian, Corp.	3356 CD 19
14 Jul 97	Base Memo Concerning Risk Assessment, OU-A, OU-C	Anderson, Elaine S SM-ALC/EMR	3387 CD 19
30 Jul 97	CRWQCB Letter to Base Concerning Comments on RI, Final Interim Basewide Report, Part 1, Revision 1	MacDonald, Alexander M California Regional Water Quality Control Board	3401 CD 19
Oct 97	Fact Sheet, Environmental Action Update, UST Program Finishes Phase I	SM-ALC/PA	3472 CD 19
07 Nov 97	CRWQCB Letter to Base Concerning Comments on RI, Draft Interim Basewide Report, Characterization Summary, Part 2a, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	3479 CD 20
13 Nov 97	EPA Memo Concerning Review Comments Interim RI Basewide Draft Report Part 2A Baseline Human Health Risk Assessment, OU-A	Paull, Jeffrey M EPA Region IX	2945 CD 17
17 Nov 97	EPA Letter to Base Concerning Comments on RI, Draft Report, Characterization Summary, OU-A	Healy, Joseph B, Jr EPA Region IX	3488 CD 20
03 Feb 98	EPA Letter to Base Transmitting Comments on Draft Basewide Removal Action Work Plan, SVE	Chang, James EPA Region IX	2794 CD 16

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
23 Feb 98	EPA Letter to Base Concerning RAR Living Review Comments on RI, Draft Interim Basewide Report, Part 1	Healy, Joseph B, Jr EPA Region IX	268 CD 2
26 Feb 98	EPA Letter to Base Concerning RAR Living Review Comments on RI, Draft Interim Basewide Report	Healy, Joseph B, Jr EPA Region IX	270 CD 2
03 Mar 98	EPA Letter to Base Transmitting RAR Living Review Comments on RI, Draft Interim Basewide Report, Part 1	Healy, Joseph B, Jr EPA Region IX	273 CD 2
Apr 98	Final Basewide Removal Action Work Plan, SVE	URS Greiner, Inc.	823 CD 4
08 Apr 98	CRWQCB Letter to Base Concerning Basewide Removal Action Work Plan, SVE	MacDonald, Alexander M California Regional Water Quality Control Board	832 CD 4
01 May 98	EPA Letter to Base Concerning RAR Living Comments on RI, Interim Basewide Report, Part 1	Healy, Joseph B, Jr EPA Region IX	850 CD 4
16 Jun 98	EPA Letter to Base Concerning Comments on Draft Basewide Data Gap FSP, Vol 2	Healy, Joseph B, Jr EPA Region IX	872 CD 3
27 Aug 98	CRWQCB Letter to Base Concerning Comments on Draft Final RI Characterization Summaries, Part 2A	MacDonald, Alexander M California Regional Water Quality Control Board	2967 CD 17
18 Sep 98	CDTSC Letter to Base Concerning Comments on Draft Final RI Characterization Summaries, Part 2A	Adams, Randy S California Department of Toxic Substances Control	2960 CD 17
24 Sep 98	EPA Letter to Base Concerning Comments on RI, Draft Final Interim Basewide Report, Characterization Summary, Part 2a, OU-A	Healy, Joseph B, Jr EPA Region IX	1824 CD 7

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
26 Oct 98	EPA Letter to Base Concerning Comments on Draft Data Gap FSP 3	Healy, Joseph B, Jr EPA Region IX	971 CD 4
27 Oct 98	CDTSC Letter to Base Concerning Comments on Draft Basewide Data Gaps FSP 3	Adams, Randy S California Department of Toxic Substances Control	969 CD 4
20 Nov 98	CRWQCB Letter to Base Concerning RI, Draft Final Interim Basewide Report, Characterization Summary, Part 2a	MacDonald, Alexander M California Regional Water Quality Control Board	976 CD 4
18 Dec 98	EPA Letter to Base Concerning Comments on RI, Draft Final Report, Characterization Summary, Part 2a, OU-A	Healy, Joseph B, Jr EPA Region IX	1805 CD 7
22 Dec 98	CDTSC Letter to Base Concerning Comments on RI, Draft Final Report, Characterization Summary, Part 2a, OU-A	Adams, Randy S California Department of Toxic Substances Control	1803 CD 7
26 Jan 99	CRWQCB Letter to Base Concerning Approval of Draft Final Basewide Data Gaps 3, FSP	MacDonald, Alexander M California Regional Water Quality Control Board	1961 CD 8
Mar 99	Update Pages, Final Basewide Data Gap, FSP 3	Jacobs Engineering Group, Inc.	929 CD 3
Mar 99	Final Basewide Data Gap FSP 3, OU-A	Jacobs Engineering Group, Inc.	3609 CD 21
11 Jun 99	CRWQCB Letter to Base Concerning Comments on RI, Draft Interim Basewide Report, Part 1 General Framework, Revision 2	MacDonald, Alexander M California Regional Water Quality Control Board	952 CD 4
25 Aug 00	CRWQCB Letter to Base Concerning No Further Action, UST, Bldg 1058	MacDonald, Alexander M California Regional Water Quality Control Board	3892 CD 22

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
28 Aug 00	CRWQCB Letter to Base Concerning No Further Action, UST, Bldg 1032	MacDonald, Alexander M California Regional Water Quality Control Board	3893 CD 22
06 Sep 00	CRWQCB Letter to Base Concerning Comments on Draft Supplemental EBS, Group 6	Taylor, James D California Regional Water Quality Control Board	3900 CD 22
19 Sep 00	CRWQCB Memo Concerning Beneficial Use, Protective Water Quality Limits, Petroleum-Based Fuels	Marshack, Jon B California Regional Water Quality Control Board	4248 CD 24
13 Oct 00	CDTSC Memo Concerning Comments on Draft Final, RI Characterization Summaries, Part 2A, OU-A	Malinowski, Mark California Department of Toxic Substances Control	4091 CD 24
30 Oct 00	CRWQCB Letter to Base Concerning Comments on RI Report, Draft Final Characterization Summaries, OU-A	Taylor, James D California Regional Water Quality Control Board	3946 CD 23
09 Nov 00	EPA Letter to Base Concerning Review Comments on RI, Draft Final Characterization Summaries, OU-A	Healy, Joseph B, Jr EPA Region IX	3955 CD 23
09 Nov 00	CDTSC Memo Concerning Comments on Human Health Risk Assessment, RI Characterization Summaries, OU-A	Renzi, Barbara California Department of Toxic Substances Control	4090 CD 24
20 Nov 00	CRWQCB Letter to Base Concerning Comments on Draft Final Supplemental EBS, Group 6	Taylor, James D California Regional Water Quality Control Board	3961 CD 23
Dec 00	Final Supplemental Environmental Baseline Survey (EBS), Vol II of II, Appendices A-F, Group 6	URS Greiner Woodward Clyde, Inc.	3964 CD 23

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Dec 00	Final Supplemental Environmental Baseline Survey (EBS), Vol I of II, Group 6	URS Greiner Woodward Clyde, Inc.	3963 CD 23
Jan 01	Supplemental FOSL, Group 6 Facilities	Lowas, Albert F, Jr AFBCA/DM McClellan	4334 CD 26
03 Jan 01	CDTSC Letter to Base Concerning Comments on Interim, Basewide Part 2A, RI Report, Characterization Summaries, OU-A	Kilgore, William California Department of Toxic Substances Control	4089 CD 24
22 Jan 01	CDTSC Memo Concerning Comments on Human Health Risk Assessment Procedures, OU-A, OU-C, OU-E, OU-F, OU-G, OU-H	Renzi, Barbara California Department of Toxic Substances Control	4119 CD 24
30 Jan 01	CDHS Letter to CDTSC Concerning Comments on Draft Final RI Characterization Summaries, Part 2A, OU-A	Bailey, Darice G California Department of Health Services	4126 CD 24
31 Jan 01	CDTSC Letter to Base Concerning Comments on Human Health Risk Assessment, OU-A, OU-B, OU-C, OU-D, OU-E, OU-F, OU-G, OU-H	Malinowski, Mark California Department of Toxic Substances Control	4118 CD 24
07 Feb 01	CDTSC Letter to Base Concerning Comments on Draft Final, RI Characterization Summary Addendum, Part 2A, OU-A	Malinowski, Mark California Department of Toxic Substances Control	4125 CD 24
Sep 01	RI, Final Interim Basewide Characterization Summaries Report, Part 2A, Vol I of XIV, OU-A	Jacobs Engineering Group, Inc.	4262 CD 24
Sep 01	RI, Final Interim Basewide Characterization Summaries Report, Part 2A, Vol II of XIV, OU-A	Jacobs Engineering Group, Inc.	4263 CD 24

McClellan AFB, CA - AR DOCUMENTS
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Sep 01	RI, Final Interim Basewide Characterization Summaries Report, Part 2A, Vol III of XIV, OU-A	Jacobs Engineering Group, Inc.	4264 CD 25
Sep 01	RI, Final Interim Basewide Characterization Summaries Report, Part 2A, Vol IV of XIV, Appendix A, OU-A	Jacobs Engineering Group, Inc.	4265 CD 25
Sep 01	RI, Final Interim Basewide Characterization Summaries Report, Part 2A, Vol V of XIV, Appendix A, OU-A	Jacobs Engineering Group, Inc.	4266 CD 25
Sep 01	RI, Final Interim Basewide Characterization Summaries Report, Part 2A, Vol VI of XIV, Appendix A, OU-A	Jacobs Engineering Group, Inc.	4267 CD 25
Sep 01	RI, Final Interim Basewide Characterization Summaries Report, Part 2A, Vol VII of XIV, Appendix A, OU-A	Jacobs Engineering Group, Inc.	4268 CD 25
Sep 01	RI, Final Interim Basewide Characterization Summaries Report, Part 2A, Vol VIII of XIV, Appendix A, OU-A	Jacobs Engineering Group, Inc.	4269 CD 25
Sep 01	RI, Final Interim Basewide Characterization Summaries Report, Part 2A, Vol IX of XIV, Appendix A, OU-A	Jacobs Engineering Group, Inc.	4270 CD 25
Sep 01	RI, Final Interim Basewide Characterization Summaries Report, Part 2A, Vol X of XIV, Appendix B, OU-A	Jacobs Engineering Group, Inc.	4271 CD 25
Sep 01	RI, Final Interim Basewide Characterization Summaries Report, Part 2A, Vol XI of XIV, Appendix C1-C10, OU-A	Jacobs Engineering Group, Inc.	4272 CD 25
Sep 01	RI, Final Interim Basewide Characterization Summaries Report, Part 2A, Vol XII of XIV, Appendix D1-D4, OU-A	Jacobs Engineering Group, Inc.	4273 CD 25

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
Sep 01	RI, Final Interim Basewide Characterization Summaries Report, Part 2A, Vol XIII of XIV, Appendix D4-D6, OU-A	Jacobs Engineering Group, Inc.	4274 CD 25
Sep 01	RI, Final Interim Basewide Characterization Summaries Report, Part 2A, Vol XIV of XIV, Appendix D6-D7, OU-A	Jacobs Engineering Group, Inc.	4275 CD 25
19 Sep 01	Base Letter to Distribution Concerning Comments on Final RI Characterization Summary, OU-A	Brunner, Paul G AFBCA/DM McClellan	4261 CD 24
24 Oct 01	EPA Letter to Base Concerning Comments on Draft RI Characterization Summary Addendum, OU-A	Healy, Joseph B, Jr EPA Region IX	4304 CD 25
30 Oct 01	CDTSC Memo Concerning Comments on RI Characterization Summaries and Risk Assessment, Addendum, OU-A	Renzi, Barbara California Department of Toxic Substances Control	4480 CD 26
02 Nov 01	CRWQCB Letter to Base Concerning Comments on Draft RI, Characterization Summaries Addendum, OU-A	Taylor, James D California Regional Water Quality Control Board	4312 CD 25
04 Dec 01	CDTSC Letter to Base Concerning Comments on Draft RI Characterization Addendum, OU-A	Depies, Kevin California Department of Toxic Substances Control	4351 CD 26
15 Apr 02	EPA Letter to Base Concerning No Comments on Draft Final RI Characterization Summary Report, OU-A	Healy, Joseph B, Jr EPA Region IX	4432 CD 26
15 Apr 02	CRWQCB Letter to Base Concerning Comments Adequately Addressed on Draft Final RI Characterization Summaries Addendum, OU-A	Taylor, James D California Regional Water Quality Control Board	4433 CD 26

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
08 Nov 02	Administrative Record File Index	LABAT-ANDERSON INCORPORATED	01 CD 1

Administrative Record for PRL S-033

McClellan AFB, CA - AR DOCUMENTS
Date of Report: 9/19/03

DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
Feb 89	RI, Stage 5, Work Plan, Area B	Radian, Corp.	1350 CD 6
31 Mar 89	CDHS Letter to Base Concerning Position on RI/FS Related Topics	Siebal, Val F California Department of Health Services	1365 CD 6
14 Jul 89	CRWQCB Letter to Base Concerning RI, Groundwater, Area B	MacDonald, Alexander M California Regional Water Quality Control Board	1401 CD 6
18 Jul 89	CDHS Letter to Base Concerning Removal Action, Area B	Landis, Anthony J California Department of Health Services	1403 CD 6
19 Jul 89	Base Letter to Task Force Concerning Expedited Response Action, Area B	Brunner, Paul G 2852 CES/EM	1404 CD 6
10 Aug 89	CDHS Letter to Base Concerning Emergency Response Action, OU-B	Siebal, Val F California Department of Health Services	1417 CD 20
18 Aug 89	EPA Letter to Base Concerning Proposed Emergency Response Action, OU-B	Mitani, Lewis EPA Region IX	1418 CD 20
Sep 89	Fact Sheet, Response Action Starts, OU-B	2852 CES/EM	1422 CD 20
13 Sep 89	Base Letter to Task Force Members Concerning Expedited Response Action Beginning, OU-B	Lawell, J Thomas, Col 2852 CES/EM	1427 CD 20
16 Oct 89	CDHS Letter to Base Concerning Review of RI and EE/CA Waste Transportation and Disposal Plan, OU-B	Landis, Anthony J California Department of Health Services	1438 CD 7

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
28 Mar 90	CDHS Letter to Base Concerning ARARS and CEQA Requirements for Non-Time Critical Removal Action Project, OU-B	Landis, Anthony J California Department of Health Services	1496 CD 11
30 Mar 90	CRWQCB Letter to Base Concerning Preliminary Design Review for Expedited Removal Action, OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	1497 CD 11
Apr 90	Fact Sheet, AR Index, Soils Holding Area	2852 CES/EM	789 CD 4
04 Apr 90	Radian Letter to Base Concerning Transmittal of Deliverable Sequence 4	Gouge, Jack D Radian Corp.	1409 CD 6
12 Apr 90	Newspaper Article, "McClellan Environmental Task Force Meeting Set-Public Comment Sought"	The News	1510 CD 7
19 Apr 90	CRWQCB Letter to Base Concerning Comments on PA Summary Report, OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	1512 CD 7
May 90	Newspaper Article, "EPA OKs Toxic Waste Site, McClellan Dump Will be Near Elementary School"	Henetz, Patty The Sacramento Union	1523 CD 7
05 May 90	Newspaper Article, "McClellan Waste Plan Revamped, Critics Praise Move of Storage Facility"	Gibson, Steve The Sacramento Bee	1524 CD 7
16 May 90	Press Release, McClellan Gains EPA Approval for Storage Site, SS-118	SM-ALC/PA	1527 CD 7
01 Jun 90	CDHS Letter to Base Concerning Comments on Draft PA Summary Report, OU-B	Landis, Anthony J California Department of Health Services	1535 CD 7

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12 Jun 90	Base Memo Concerning Public Comments on Expedited Action, OU-B	Findley, Keith G, Col SM-ALC/EM	1540 CD 7
15 Jun 90	EPA Letter to Base Transmitting Comments and Summary for Draft PA Summary Report, 06 Apr 90	Mitani, Lewis EPA Region IX	1542 CD 7
22 Jun 90	Base Letter to School Superintendent Concerning Update on Environmental Cleanup Efforts	Findley, Keith G, Col SM-ALC/EM	1544 CD 7
27 Jun 90	CRWQCB Letter to Base Concerning Approval of Recommendation Letter for Sampling of Monitoring Wells, Third Quarter 90	MacDonald, Alexander M California Regional Water Quality Control Board	1546 CD 7
Jul 90	Soil Gas Investigation Work Plan, Sampling and Analysis, OU-B	Radian, Corp.	3494 CD 21
27 Jul 90	CRWQCB Letter to Base Concerning Review Comments on Soil Gas Investigation Report, OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	1562 CD 10
Aug 90	RI/FS, Stage 4, Planning Network Report	Radian, Corp.	1567 CD 10
14 Aug 90	Base Letter to Regulators Transmitting Response to Comments on PA Summary Report, OU-B	Ierardi, Mario E, Capt SM-ALC/EM	1570 CD 10
19 Sep 90	EPA Letter to Base Concerning Response to Comments on PA Summary Report, OU-B	Mitani, Lewis EPA Region IX	1582 CD 11
28 Sep 90	Base Letter to EPA Concerning EE/CA, OU-B	Ierardi, Mario E, Capt SM-ALC/EM	1586 CD 11

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18 Oct 90	CDHS Letter to Base Concerning Mercury Contamination	Siebal, Val F California Department of Health Services	1594 CD 11
23 Oct 90	Base Letter to MAIPG Concerning Soil Gas Investigation, OU-B	Ierardi, Mario E, Capt SM-ALC/EM	1597 CD 11
Nov 90	Fact Sheet, The Facts, OU-B Expedited Response Action, No 4	SM-ALC/PA	1604 CD 11
29 Nov 90	CRWQCB Letter to Base Concerning EE/CA OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	1609 CD 11
29 Nov 90	EPA Letter to Base Concerning Comments on EE/CA, OU-B	Mitani, Lewis EPA Region IX	1610 CD 11
30 Nov 90	CDHS Letter to Base Concerning EE/CA, OU-B	Landis, Anthony J California Department of Health Services	1612 CD 11
Dec 90	Fact Sheet, The Facts, OU-B, EE/CA, No 6	SM-ALC/PA	1617 CD 11
Jan 91	Stage 3, EE/CA Layperson's Summary, OU-B	Radian, Corp.	1631 CD 11
29 Jan 91	Base Letter to EPA Concerning EE/CA- EA, OU-B	Findley, Keith G, Col SM-ALC/EM	1640 CD 11
Feb 91	Soil Gas Investigation, QA/QC Report, Vol I of III, OU-B	Radian, Corp.	1642 CD 10
Feb 91	Soil Gas Investigation, QA/QC Report, Vol II of III, OU-B	Radian, Corp.	1643 CD 11

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Feb 91	Soil Gas Investigation, QA/QC Report, Vol III of III, OU-B	Radian, Corp.	1644 CD 11
Feb 91	Stage 3, EA, EE/CA, Final Report, Disposal and Reuse, OU-B	Radian, Corp.	1654 CD 7
04 Feb 91	CDHS Letter to SMAQMD Concerning Groundwater Extraction Program, OU-B	Landis, Anthony J California Department of Health Services	1656 CD 7
22 Feb 91	Governor's Office Letter to CHSD Concerning Groundwater Removal Action, OU-B	Nunenkamp, David C Governor's Office of Planning and Research	1660 CD 7
Mar 91	ROD, RI/FS, NFA, Stage 7, Final, OU-B	Radian, Corp.	1668 CD 7
01 Mar 91	CDHS Letter to Base Concerning EE/CA-EA, OU-B	Landis, Anthony J California Department of Health Services	1669 CD 7
01 Mar 91	Task Force Member Letter to Base Concerning EE/CA-EA Report	Yarbrough, Charles H City of Sacramento	1673 CD 7
02 Mar 91	MESS Letter to Base Concerning Removal Actions, OU-B	Fisher, Mary R McClellan Ecological Seepage Situation	1675 CD 7
04 Mar 91	USAF Letter to US Congress Concerning Comments on EE/CA, EA, OU-B	Wise, Sidney J, Col USAF	1676 CD 7
05 Mar 91	California Legislature Letter to Base Concerning Removal Action, OU-B	Connelly, Lloyd G California Legislature	1677 CD 7

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07 Mar 91	Radian Letter to HSD/YAQ Concerning Submission of Deliverable Sequence 4	Gouge, Jack D Radian Corp.	1678 CD 7
11 Mar 91	MESS Letter to Base Concerning Position on Extracted Water Disposal Action, OU-B	McClellan Ecological Seepage Situation	288 CD 4
12 Mar 91	Radian Letter to HSD/YAQ Concerning EE/CA-EA, OU-B	Gouge, Jack D Radian Corp.	1681 CD 7
21 Mar 91	CRWQCB Letter to Base Concerning Soil Gas Investigation Summary Report, OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	1684 CD 7
Apr 91	RI, HSP, OU-B	Radian, Corp.	1687 CD 7
Apr 91	Fact Sheet, Environmental Action Update, "Cleanup Continues in OU-B	SM-ALC/PA	1692 CD 7
Apr 91	Stage 3, Final Action Memorandum, OU-B	Radian, Corp.	1693 CD 7
Apr 91	Stage 3, FONSI, EE/CA, EA and Removal Action Final Report, Disposal and Reuse, OU-B	Radian, Corp.	1697 CD 7
03 Apr 91	CRWQCB Letter to Base Concerning RI Sampling Plan, OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	1694 CD 7
24 Apr 91	Radian Letter to HSD/YAQ Transmitting EE/CA-EA Action Memorandum, OU-B	Gouge, Jack D Radian Corp.	1698 CD 7
30 Apr 91	CRWQCB Letter to Base Concerning Action Memorandum and FONSI, OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	1700 CD 7

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02 May 91	EPA Letter to Base Concerning Review of Draft SAP, OU-B	Mitani, Lewis EPA Region IX	1705 CD 20
07 May 91	CDHS Letter to Base Concerning Extension for Review of RI SAP, OU-B	Landis, Anthony J California Department of Health Services	1709 CD 20
22 May 91	CDHS Letter to Base Concerning Final Action Memorandum, OU-B	Landis, Anthony J California Department of Health Services	1711 CD 20
Jun 91	Fact Sheet, The Facts, RI, OU-B, No 9	SM-ALC/PA	1721 CD 20
06 Jun 91	EPA Letter to Base Concerning Comments on RI, SAP, OU-B	Mitani, Lewis EPA Region IX	1722 CD 20
07 Jun 91	CDHS Letter to Base Concerning Comments on SAP, OU-B	Landis, Anthony J California Department of Health Services	1723 CD 20
24 Jun 91	Base Letter to EPA Concerning Signed Pages for Action Memorandum and FONSI	Findley, Keith G, Col SM-ALC/EM	1725 CD 20
29 Jul 91	CDTSC Letter to Base Concerning Comments on RI, Draft HSP, OU-B	Wang, David California Department of Toxic Substances Control	1746 CD 11
04 Sep 91	CRWQCB Letter to Base Concerning QAPP, OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	1775 CD 20
17 Sep 91	Base Letter to EPA Concerning RI, SAP, OU-B	Ierardi, Mario E, Capt SM-ALC/EM	1785 CD 20

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18 Sep 91	CRWQCB Letter to Base Concerning RI, Draft Final SAP, OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	1786 CD 20
27 Sep 91	Base Letter to EPA Concerning RI, Final SAP, OU-B	Anderson, Elaine S SM-ALC/EM	1790 CD 7
30 Sep 91	EPA Letter to Base Concerning Extension for RI, SAP, OU-B	Mitani, Lewis EPA Region IX	1792 CD 7
Oct 91	PA, Stage 3, Summary Report, Vol I of III, OU-B	Radian, Corp.	1793 CD 7
Oct 91	PA, Stage 3, Summary Report, Vol II of III, OU-B	Radian, Corp.	1794 CD 7
Oct 91	PA, Stage 3, Summary Report, Vol III of III, OU-B	Radian, Corp.	1795 CD 7
Oct 91	RI, HSP, OU-B	Radian, Corp.	2974 CD 17
01 Oct 91	CRWQCB Letter to Base Concerning Response to Comments, Draft SAP, OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	2972 CD 17
29 Oct 91	CDTSC Letter to Base Concerning RI SAP, OU-B	Wang, David California Department of Toxic Substances Control	2986 CD 17
31 Oct 91	EPA Letter to Base Concerning Summary of QAPP Revisions, OU-B	Mitani, Lewis EPA Region IX	2987 CD 17
Nov 91	RI, Stage 7, Final SAP, OU-B	Radian, Corp.	2989 CD 20

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18 Nov 91	Base Letter to EPA Concerning RI, Final SAP, OU-B	Anderson, Elaine S SM-ALC/EMR	2997 CD 17
24 Dec 91	Base Letter to EPA Concerning Soil Gas Investigation, OU-B	Ierardi, Mario E, Capt SM-ALC/EM	1715 CD 20
Jan 92	Technical Memorandum, Soil Remedial Technologies Screening	Radian, Corp.	2182 CD 9
09 Jan 92	RI, Monthly Status Meeting, 12 Dec 91, OU-B	SM-ALC/EM	3282 CD 18
28 Jan 92	CRWQCB Letter to Base Concerning Extractable Total Petroleum Hydrocarbons and PCB Second Column Analyses, Request for Technical Variance	MacDonald, Alexander M California Regional Water Quality Control Board	1708 CD 20
Mar 92	Final Report, Remedial Field Operation, Site 33, PRL-033	US Pollution Control, Inc.	4313 CD 26
28 Oct 92	CRWQCB Letter to Base Concerning Review of FSP, OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	2032 CD 8
04 Dec 92	CRWQCB Letter to Base Concerning Review of SAP Addendum FSP, OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	2050 CD 8
01 Feb 93	EPA Letter to Base Concerning Review of Consensus Statement on Background Constituents in Subsurface Soils	Moore, Katherine EPA Region IX	2073 CD 8
17 Feb 93	Consensus Statement, Background Inorganic Constituents in Subsurface Soils	Radian Corp.	2084 CD 8

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02 Apr 93	CRWQCB Letter to Base Concerning Review of FSP, OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	2112 CD 8
09 Apr 93	CDTSC Letter to Base Concerning Comments on FSP, OU-B	Malinowski, Mark California Department of Toxic Substances Control	2114 CD 8
Jun 94	RI, Interim Basewide Draft Report, Part 2B, Appendix A	Radian Corp.	2340 CD 20
Jun 94	RI, Interim Basewide Draft Report, Part 2B, Appendix C	Radian Corp.	2343 CD 13
Jun 94	RI, Interim Basewide Draft Report, Part 2B, RI Characterization Studies	Radian Corp.	2339 CD 12
Jun 94	RI, Interim Basewide Draft Report, Part 1, General Framework	Radian Corp.	2338 CD 12
Jun 94	RI, Interim Basewide Draft Report, Part 2B, Appendix A (Continued)	Radian Corp.	2341 CD 12
Jun 94	RI, Interim Basewide Draft Report, Part 2B, Appendix D	Radian Corp.	2344 CD 13
Jun 94	RI, Interim Basewide Draft Report, Part 2B, Appendix B (Continued)	Radian Corp.	2342 CD 13
07 Jul 94	CRWQCB Letter to Base Concerning Comments on Interim RI Basewide Draft Report Part 1 General Framework	MacDonald, Alexander M California Regional Water Quality Control Board	2372 CD 13
Aug 94	Basewide Ecological Risk Assessment Final Scoping Report, OU-B, OU-D	Jacobs Engineering Group, Inc.	2398 CD 8

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04 Aug 94	CDTSC Letter to Base Concerning Comments on RI Interim Basewide Draft Report, General Framework	Malinowski, Mark California Department of Toxic Substances Control	2409 CD 8
04 Aug 94	EPA Letter to Base Concerning Review Comments on RI Interim Basewide Draft Report	Healy, Joseph B, Jr EPA Region IX	2410 CD 8
16 Aug 94	CDTSC Letter to Base Concerning Comments on Basewide Ecological Risk Assessment Draft Final Scoping Report, OU-B, OU-D	Harris, John California Department of Toxic Substances Control	2420 CD 8
25 Aug 94	CRWQCB Letter to Base Concerning Comments on Basewide Ecological Risk Assessment Draft SAP, OU-B, OU-D	MacDonald, Alexander M California Regional Water Quality Control Board	2424 CD 8
Oct 94	RI, Interim Basewide Draft Final Report, Part 1, General Framework	Radian Corp.	2449 CD 15
Nov 94	RI, Interim Basewide Final Report, Part 1, General Framework	Radian Corp.	2480 CD 13
14 Nov 94	EPA Letter to Base Concerning Review Comments on RI Interim Basewide Draft Final Report	Healy, Joseph B, Jr EPA Region IX	2482 CD 13
27 Jan 95	CRWQCB Letter to Base Concerning Interim RI Basewide Draft Report for Part 1 General Framework Appendices A-E	MacDonald, Alexander M California Regional Water Quality Control Board	2537 CD 14
01 Mar 95	CRWQCB Letter to Base Concerning Draft Basewide Interim RI Characterization Summaries Part 2B, OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	2563 CD 14

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14 Mar 95	EPA Letter to Base Concerning Review Comments on Draft Appendices for Basewide Interim RI Part 1	Healy, Joseph B, Jr EPA Region IX	2581 CD 14
14 Mar 95	EPA Letter to Base Concerning Review Comments on Basewide Draft Interim RI Characterization Summary Part 2B, OU-B	Healy, Joseph B, Jr EPA Region IX	2582 CD 14
20 Mar 95	CRWQCB Letter to Base Concerning Comments on Basewide Interim RI Draft Report, Part 1, Appendix F	MacDonald, Alexander M California Regional Water Quality Control Board	2585 CD 14
23 Mar 95	EPA Letter to Base Concerning Comments on Interim RI Basewide Draft Report, Part 1, Appendix E	Healy, Joseph B, Jr EPA Region IX	2586 CD 14
03 Apr 95	CDTSC Letter to Base Concerning Comments on RI Characterization Summaries Basewide Draft Report, OU-B	Malinowski, Mark California Department of Toxic Substances Control	2611 CD 14
Jul 95	Update Pages, RI, Interim Basewide Draft Final Report, Characterization Summaries, Part 2B, Appendix C, OU-B	Radian Corp.	2675 CD 15
Jul 95	Update Pages, RI, Interim Basewide Draft Final Report, Part 1 General Framework, Appendices A Through C, E, F	Radian Corp.	2676 CD 15
Jul 95	RI, Interim Basewide Draft Final Report, Characterization Summaries, Part 2B Continued, OU-B	Radian Corp.	2678 CD 15
02 Aug 95	CRWQCB Letter to Base Concerning Comments on RI Characterization Summary Part 2B, OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	2707 CD 15

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
03 Aug 95	EPA Letter to Base Concerning Comments on Draft Final Appendices to Basewide Interim RI	Healy, Joseph B, Jr EPA Region IX	2712 CD 15
03 Aug 95	EPA Letter to Base Concerning Comments on Draft Final RI Characterization Summaries, OU-B	Healy, Joseph B, Jr EPA Region IX	2713 CD 15
17 Aug 95	CDTSC Letter to Base Concerning Comments on Draft Final RI Characterization Summary, OU-B	Malinowski, Mark California Department of Toxic Substances Control	2724 CD 15
28 Sep 95	Base Memo Concerning Release Dates of RI Characterization Summaries, IC-31, OU-B	Schmalz, Kirk L SM-ALC/EMR	2761 CD 15
07 Nov 95	EPA Letter to Base Concerning Comments on Basewide Interim RI Report Updating Process	Healy, Joseph B, Jr EPA Region IX	2810 CD 16
Dec 95	RI, Interim Basewide Final Report, Characterization Summaries, Part 2B, Vol I of IX, OU-B	Radian Corp.	2826 CD 16
Dec 95	RI, Interim Basewide Final Report, Characterization Summaries, Part 2B, Vol II of IX, OU-B	Radian Corp.	2827 CD 16
Dec 95	RI, Interim Basewide Final Report, Characterization Summaries, Part 2B, Vol III of IX, Appendix A, OU-B	Radian Corp.	2828 CD 16
Dec 95	RI, Interim Basewide Final Report, Characterization Summaries, Part 2B, Vol IV of IX, Appendix A, OU-B	Radian Corp.	2829 CD 16
Dec 95	RI, Interim Basewide Final Report, Characterization Summaries, Part 2B, Vol V of IX, Appendix B, OU-B	Radian Corp.	2830 CD 16

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Dec 95	RI, Interim Basewide Final Report, Characterization Summaries, Part 2B, Vol VI of IX, Appendix B, OU-B	Radian Corp.	2831 CD 16
Dec 95	RI, Interim Basewide Final Report, Characterization Summaries, Part 2B, Vol VII of IX, Appendix B, OU-B	Radian Corp.	2832 CD 16
Dec 95	RI, Interim Basewide Final Report, Characterization Summaries, Part 2B, Vol VIII of IX, Appendix C, OU-B	Radian Corp.	2833 CD 20
Dec 95	RI, Interim Basewide Final Report, Characterization Summaries, Part 2B, Vol IX of IX, Appendix D, OU-B	Radian Corp.	2834 CD 20
01 Dec 95	Base Memo Concerning Final RI Characterization Summary Submittal, OU-B	Schmalz, Kirk L SM-ALC/EMR	2825 CD 16
15 Dec 95	RI, Interim Basewide Final Report, General Framework, Appendices A Through C, E, F, OU-B	Radian Corp.	2855 CD 17
19 Dec 95	CRWQCB Letter to Base Concerning Comments on Final Basewide Ecological Risk Assessment Summary Scoping Report	MacDonald, Alexander M California Regional Water Quality Control Board	2859 CD 17
14 Feb 96	CDTSC Letter to Base Concerning CDTSC Comments on Final Basewide EA Summary Scoping Report, OU-A, OU-B, OU-C, OU-D	Malinowski, Mark California Department of Toxic Substances Control	3032 CD 17
Nov 96	RI, Draft Interim Basewide Report, Revision 1	Radian, Corp.	3198 CD 18
07 Feb 97	CRWQCB Letter to Base Concerning Comments on RI, Draft Interim Basewide Report, General Framework, Revision 1	MacDonald, Alexander M California Regional Water Quality Control Board	3262 CD 19

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10 Feb 97	EPA Letter to Base Concerning Comments on RI, Draft Interim Basewide Update	Healy, Joseph B, Jr EPA Region IX	3264 CD 19
20 Feb 97	CDTSC Letter to Base Concerning Comments on RI, Draft Interim Basewide Report, Part 1: General Framework, Appendix I	Adams, Randy S California Department of Toxic Substances Control	3276 CD 18
03 Apr 97	CRWQCB Letter to Base Concerning Comments on RI, Draft Final Interim Basewide Report, Revision 1	MacDonald, Alexander M California Regional Water Quality Control Board	3319 CD 18
14 Apr 97	CDTSC Letter to Base Concerning Comments on RI, Draft Final Interim Basewide Report, Part 1	Adams, Randy S California Department of Toxic Substances Control	3327 CD 18
23 Apr 97	EPA Letter to Base Concerning Comments on RI, Draft Final Interim Update	Healy, Joseph B, Jr EPA Region IX	3334 CD 18
30 Apr 97	EPA Letter to Base Concerning Comments on Removal Action Work Plan, Basewide SVE	Chang, James EPA Region IX	3337 CD 18
Jun 97	Final Ecological Risk Assessment Strategy Report	Radian, Corp.	3354 CD 19
Jun 97	RI, Final Interim Basewide Report, Part 1, Vol I of II, Revision 1	Radian, Corp.	3355 CD 19
Jun 97	RI, Final Interim Basewide Report, Part 1, Vol II of II, Appendices, Revision 1	Radian, Corp.	3356 CD 19
30 Jul 97	CRWQCB Letter to Base Concerning Comments on RI, Final Interim Basewide Report, Part 1, Revision 1	MacDonald, Alexander M California Regional Water Quality Control Board	3401 CD 19

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03 Feb 98	EPA Letter to Base Transmitting Comments on Draft Basewide Removal Action Work Plan, SVE	Chang, James EPA Region IX	2794 CD 16
23 Feb 98	EPA Letter to Base Concerning RAR Living Review Comments on RI, Draft Interim Basewide Report, Part 1	Healy, Joseph B, Jr EPA Region IX	268 CD 2
26 Feb 98	EPA Letter to Base Concerning RAR Living Review Comments on RI, Draft Interim Basewide Report	Healy, Joseph B, Jr EPA Region IX	270 CD 2
03 Mar 98	EPA Letter to Base Transmitting RAR Living Review Comments on RI, Draft Interim Basewide Report, Part 1	Healy, Joseph B, Jr EPA Region IX	273 CD 2
Apr 98	Final Basewide Removal Action Work Plan, SVE	URS Greiner, Inc.	823 CD 4
08 Apr 98	CRWQCB Letter to Base Concerning Basewide Removal Action Work Plan, SVE	MacDonald, Alexander M California Regional Water Quality Control Board	832 CD 4
01 May 98	EPA Letter to Base Concerning RAR Living Comments on RI, Interim Basewide Report, Part 1	Healy, Joseph B, Jr EPA Region IX	850 CD 4
20 Aug 98	EPA Letter to Base Concerning Comments on Draft Annotated Outline, RI General Framework Update	Healy, Joseph B, Jr EPA Region IX	1815 CD 7
Sep 98	Final Data Gap FSP 2	Radian, Corp.	898 CD 12
24 Feb 99	EPA Letter to Base Concerning Final Draft FSP, Hazardous Waste Storage Areas, SS-118	Healy, Joseph B, Jr EPA Region IX	3607 CD 22

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09 Jun 99	CDTSC Letter to Base Concerning Comments on RI, Draft Interim Basewide Report, General Framework, Revision 2	Adams, Randy S California Department of Toxic Substances Control	951 CD 4
10 Jun 99	EPA Letter to Base Concerning Review Comments on Interim RI Basewide Draft Report Part 1 General Framework Update	Hanusiak, Lisa EPA Region IX	2907 CD 17
11 Jun 99	CRWQCB Letter to Base Concerning Comments on RI, Draft Interim Basewide Report, Part 1 General Framework, Revision 2	MacDonald, Alexander M California Regional Water Quality Control Board	952 CD 4
15 Jun 99	EPA Letter to Base Concerning Review Comments on Draft Interim Basewide RI Report, Part 1 General Framework Update	Hanusiak, Lisa EPA Region IX	2899 CD 17
11 Feb 00	CDTSC Memo Concerning Comments on Draft Non-VOC, EE/CA, Work Plan, PRL S-033, SS-118	Malinowski, Mark California Department of Toxic Substances Control	3761 CD 21
15 Feb 00	CRWQCB Letter to Base Concerning Comments on Draft EE/CA, Work Plan, PRL S-033	Taylor, James D California Regional Water Quality Control Board	3764 CD 21
23 Feb 00	EPA Letter to Base Concerning Comments on Draft Non-VOC EE/CA, PRL S-033	Healy, Joseph B, Jr EPA Region IX	3767 CD 21
07 Mar 00	CDTSC Letter to Base Concerning Comments on Draft Non-VOC, EE/CA, Work Plan	Kilgore, William California Department of Toxic Substances Control	3778 CD 22
07 Mar 00	CDTSC Letter to Base Concerning Comments on Draft Non-VOC, EE/CA, Work Plan, PRL S-033	Kilgore, William California Department of Toxic Substances Control	3779 CD 22

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14 Mar 00	EPA Letter to Base Concerning Comments on Draft Non-VOC, EE/CA	Healy, Joseph B, Jr EPA Region IX	3789 CD 22
20 Mar 00	CRWQCB Letter to Base Concerning No Comments on Draft Radiological, Final Status Survey Report, Bldg 786	Taylor, James D California Regional Water Quality Control Board	3791 CD 22
May 00	Final Work Implementation Plan, OU-B	Radian, Corp.	3823 CD 22
10 May 00	CDHS Letter to CDTSC Concerning Comments on Radiological Final Status Survey Report, Bldg. 786, SS-118	Bailey, Darice G California Department of Health Services	4098 CD 24
19 May 00	CRWQCB Letter to Base Concerning Comments on Draft Final EE/CA, Work Plan, PRL S-033	Taylor, James D California Regional Water Quality Control Board	3833 CD 22
30 May 00	EPA Letter to Base Concerning Comments on EE/CA, Non-VOC, PRL S-033, SS-118	Healy, Joseph B, Jr EPA Region IX	3835 CD 22
Jun 00	Press Release, Public Notice, Base Plans Continued Short Term, Permitted Storage Facility for Hazardous Waste, SS-118	SM-ALC/EM	3845 CD 23
02 Jun 00	Final EE/CA and Work Plan, Non-VOC, PRL S-033, SS-118	CH2M Hill	3847 CD 23
12 Jun 00	Newspaper Article, "Public Notice, Public Comment Period and Public Meeting for Proposed RA and Proposed Non-VOC Contaminant Unit, 12 Jun 00 - 11 Jul 00 and Public Meeting, 20 Jun 00"	The Sacramento Bee	4074 CD 24
22 Jun 00	CDTSC Letter to Base Concerning Comments on Draft Action Memorandum, PRL S-033	Kilgore, William California Department of Toxic Substances Control	3856 CD 23

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30 Jun 00	EPA Letter to Base Concerning Comments on Draft Action Memorandum, PRL S-033	Healy, Joseph B, Jr EPA Region IX	3863 CD 23
30 Jun 00	CRWQCB Letter to Base Concerning No Comments on Draft Action Memorandum, PRL S-033	Taylor, James D California Regional Water Quality Control Board	3862 CD 23
24 Jul 00	CDHS Letter to CDTSC Concerning No Comments on Draft Final Radiological Final Status Survey Report, Bldg 786, SS-118	Bailey, Darice G California Department of Health Services	4102 CD 24
06 Nov 00	Decision Document, Action Memorandum, PRL S-033, SS-118	Lowas, Albert F, Jr AFBCA/DM McClellan	4073 CD 24
14 Dec 00	Base Letter to Regulators Concerning Removal Action, Non-Time Critical, PRL S-033	Mook, Philip H, Jr AFBCA/DM McClellan	3973 CD 23
18 Dec 00	EPA Letter to Base Concerning Concurrence on Decision Document, RA Action Memorandum, PRL S-033, SS-118	Meer, Daniel A EPA Region IX	4079 CD 24
08 Jan 01	CDTSC Letter to Base Transmitting Comments on Radiological Final Status Surveys and Termination Reports	Kilgore, William California Department of Toxic Substances Control	4097 CD 24
Feb 01	Final Work Implementation Plan, Ex Situ Wet Oxidation Treatability Study, Revision 0	URS, Corp.	4121 CD 24
14 Feb 01	CRWQCB Letter to Base Concerning Comments Adequately Addressed, Draft Final, RA Work Plan, PRL S-033	Taylor, James D California Regional Water Quality Control Board	4129 CD 24
15 Feb 01	CDTSC Letter to Base Concerning Comments on Draft Final, RA Work Plan, PRL S-033	Malinowski, Mark California Department of Toxic Substances Control	4130 CD 24

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
26 Feb 01	RA, Final Work Plan, PRL S-033	Roy F. Weston, Inc.	4134 CD 24
05 Mar 01	EPA Letter to Base Concerning Response to Comments on Draft Final Work Implementation Plan, Ex-Situ Wet Oxidation Treatability Study	Healy, Joseph B, Jr EPA Region IX	4146 CD 24
28 Jun 01	CDTSC Letter to Base Concerning Approval of RA Memorandum and Final SVE, EE/CA, PRL S-033, IC-25, IC-41, IC-42, IC-43	Malinowski, Mark California Department of Toxic Substances Control	4212 CD 24
02 Jul 01	Initial Parcel FS Meeting Minutes, 11 Jun 01	CH2M Hill	4219 CD 25
Oct 01	Final Surface Water and Sediment Sampling Report, PRL S-033, SS-118	TechLaw, Inc.	4338 CD 26
05 Nov 01	EPA Letter to Base Concerning Comments on Draft Removal Action Report, PRL S-033, SS-118	Kistner, Glenn R EPA Region IX	4182 CD 24
28 Nov 01	CDTSC Memo Concerning Comments on Draft Removal Action Report, PRL S-033	Malinowski, Mark California Department of Toxic Substances Control	4482 CD 26
04 Dec 01	CRWQCB Letter to Base Concerning Comments on Draft Removal Action Report, PRL S-033	Taylor, James D California Regional Water Quality Control Board	4352 CD 26
11 Dec 01	CDTSC Letter to Base Concerning Comments on Draft Removal Action Report, PRL S-033	Depies, Kevin California Department of Toxic Substances Control	4355 CD 26
18 Dec 01	EPA Letter to Base Concerning Comments on Draft Ex-Situ Thermal Desorption Technology Application Analysis Report	Kistner, Glenn R EPA Region IX	4361 CD 26

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Jan 02	Final Work Implementation Plan, Soil Washing and Solidification/Stabilization, Revision 1	URS, Corp.	4477 CD 26
07 Jan 02	CDTSC Letter to Distribution Concerning Request for ARAR Requirements for Initial Parcel FS	Depies, Kevin California Department of Toxic Substances Control	4370 CD 26
04 Feb 02	CDTSC Memo Concerning Comments on Draft Technology Application Analysis Report, Ex Situ Thermal Desorption Treatability Study	Lee, Bal California Department of Toxic Substances Control	4400 CD 26
12 Feb 02	CRWQCB Letter to Base Concerning Comments on Draft Ex Situ Thermal Desorption Treatability Study, Technology Application Analysis Report	Taylor, James D California Regional Water Quality Control Board	4387 CD 26
25 Feb 02	CRWQCB Letter to Base Concerning Comments Adequately Addressed, Draft Final Removal Action Report, PRL S-033	Taylor, James D California Regional Water Quality Control Board	4391 CD 26
11 Mar 02	CDTSC Letter to Base Concerning Comments on Draft Technology Application Analysis Report, Ex Situ Thermal Desorption Treatability Study	Depies, Kevin California Department of Toxic Substances Control	4399 CD 26
19 Mar 02	CRWQCB Letter to CDTSC Transmitting ARARs for Soil Remediation, Initial Parcel FS	Taylor, James D California Regional Water Quality Control Board	4407 CD 26
22 Mar 02	CDTSC Letter to Base Concerning Comments on Draft Final Removal Action Report, PRL S-033	Depies, Kevin California Department of Toxic Substances Control	4410 CD 26
22 Mar 02	CDTSC Letter to Base Concerning Potential ARARs, Initial Parcel FS	Depies, Kevin California Department of Toxic Substances Control	4414 CD 26

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
04 Apr 02	EPA Letter to Base Concerning No Further Comments on Draft Final Removal Action Report, PRL S-033	Kistner, Glenn R EPA Region IX	4428 CD 26
23 Apr 02	CRWQCB Letter to Base Concerning Comments Adequately Addressed on Draft Final Ex Situ Thermal Desorption Treatability Study, Application Analysis Report	Taylor, James D California Regional Water Quality Control Board	4439 CD 26
25 Apr 02	EPA Letter to Base Concerning Comments on Draft Final Ex Situ Thermal Desorption Technology Application Analysis Report	Kistner, Glenn R EPA Region IX	4446 CD 26
May 02	Final Technology Application Analysis Report, Ex Situ Thermal Desorption Treatability Study, Revision 0	URS Group, Inc.	4449 CD 26
08 May 02	CDTSC Letter to Base Concerning Comments Adequately Addressed on Draft Final Technology Application Analysis Report, Ex Situ Thermal Desorption Treatability Study	Depies, Kevin California Department of Toxic Substances Control	4460 CD 26
20 May 02	Final Initial Parcel Data Gaps FSP and HSP	CH2M Hill	4450 CD 26
20 May 02	CDTSC Letter to Base Concerning Comments on Draft Initial Parcel Data Gaps FSP	Depies, Kevin California Department of Toxic Substances Control	4464 CD 26
30 May 02	CDTSC Letter to Base Concerning Concurrence on Final Initial Parcel, Data Gaps FSP and HSP	Depies, Kevin California Department of Toxic Substances Control	4471 CD 26
08 Nov 02	Administrative Record File Index	LABAT-ANDERSON INCORPORATED	01 CD 1

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
UNK	Newspaper Article, "Toxics Site Plan for McClellan Hit, Depot Would Be Near School"	Harris, Tom The Sacramento Bee	745 CD 4

Administrative Record for PRL S-040

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
Aug 90	RI/FS, Stage 4, Planning Network Report	Radian, Corp.	1567 CD 10
18 Jul 94	CRWQCB Letter to Base Concerning Comments on Draft PA Work Plan	MacDonald, Alexander M California Regional Water Quality Control Board	2380 CD 13
22 Jul 94	SMWA Letter to Base Concerning Possible Contamination on Northeast Side of Base Runway Strip, OU-E, OU-F, OU-G, OU-H	Hymes, Kelly Sacramento Metropolitan Water Authority	2385 CD 13
10 Aug 94	EPA Letter to Base Concerning Comments on PA/SI Draft Technical Review Report and Draft Work Plan	Healy, Joseph B, Jr EPA Region IX	2414 CD 8
Sep 94	PA/SI, Final Technical Summary Report	Radian Corp.	2427 CD 8
Feb 95	CDTSC Letter to Base Concerning Review Comments on Draft PA Report, OU-E, OU-F, OU-G, OU-H	Malinowski, Mark California Department of Toxic Substances Control	755 CD 4
24 Mar 95	EPA Letter to Base Concerning Review Comments on Draft PA	Healy, Joseph B, Jr EPA Region IX	2590 CD 14
28 Mar 95	CRWQCB Letter to Base Concerning Review Comments on Draft PA	MacDonald, Alexander M California Regional Water Quality Control Board	2591 CD 14
Sep 96	Draft FSP, OU-E, OU-F, OU-G, OU-H	Radian, Corp.	3157 CD 18
Nov 96	RI, Draft Interim Basewide Report, Revision 1	Radian, Corp.	3198 CD 18

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27 Nov 96	CRWQCB Letter to Base Concerning Comments on Draft SAP, OU-E, OU-F, OU-G, OU-H	MacDonald, Alexander M California Regional Water Quality Control Board	3211 CD 18
05 Dec 96	CDTSC Letter to Base Concerning Comments on Draft FSP, OU-E, OU-F, OU-G, OU-H	Adams, Randy S California Department of Toxic Substances Control	3222 CD 19
09 Dec 96	EPA Letter to Base Concerning Comments on Draft FSP, OU-E, OU-F, OU-G, OU-H	Healy, Joseph B, Jr EPA Region IX	3225 CD 19
06 Mar 97	CRWQCB Letter to Base Concerning Comments on Draft Final FSP, OU-E, OU-F, OU-G, OU-H	MacDonald, Alexander M California Regional Water Quality Control Board	3290 CD 18
10 Mar 97	CDTSC Letter to Base Concerning Comments on Draft Final FSP, OU-E, OU-F, OU-G, OU-H	Adams, Randy S California Department of Toxic Substances Control	3292 CD 18
11 Mar 97	EPA Letter to Base Concerning Comments on Draft Final FSP, OU-E, OU-F, OU-G, OU-H	Healy, Joseph B, Jr EPA Region IX	3294 CD 18
Apr 97	Final FSP, OU-E, OU-F, OU-G, OU-H	Radian, Corp.	3313 CD 20
03 Apr 97	CRWQCB Letter to Base Concerning Comments on RI, Draft Final Interim Basewide Report, Revision 1	MacDonald, Alexander M California Regional Water Quality Control Board	3319 CD 18
Jun 97	RI, Final Interim Basewide Report, Part 1, Vol I of II, Revision 1	Radian, Corp.	3355 CD 19
Jun 97	RI, Final Interim Basewide Report, Part 1, Vol II of II, Appendices, Revision 1	Radian, Corp.	3356 CD 19

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
30 Jul 97	CRWQCB Letter to Base Concerning Comments on RI, Final Interim Basewide Report, Part 1, Revision 1	MacDonald, Alexander M California Regional Water Quality Control Board	3401 CD 19
23 Feb 98	EPA Letter to Base Concerning RAR Living Review Comments on RI, Draft Interim Basewide Report, Part 1	Healy, Joseph B, Jr EPA Region IX	268 CD 2
26 Feb 98	EPA Letter to Base Concerning RAR Living Review Comments on RI, Draft Interim Basewide Report	Healy, Joseph B, Jr EPA Region IX	270 CD 2
03 Mar 98	EPA Letter to Base Transmitting RAR Living Review Comments on RI, Draft Interim Basewide Report, Part 1	Healy, Joseph B, Jr EPA Region IX	273 CD 2
27 Apr 98	CRWQCB Letter to Base Concerning Comments on RI, Draft Interim Basewide Report, Characterization Summary, FSP, Parts 2e-2h, OU-E, OU-F, OU-G, OU-H	MacDonald, Alexander M California Regional Water Quality Control Board	845 CD 4
29 Apr 98	EPA Letter to Base Concerning Comments on RI, Draft Interim Basewide Report, Characterization Summary, FSP, Parts 2e-2h, OU-E, OU-F, OU-G, OU-H	Healy, Joseph B, Jr EPA Region IX	846 CD 4
01 May 98	EPA Letter to Base Concerning RAR Living Comments on RI, Interim Basewide Report, Part 1	Healy, Joseph B, Jr EPA Region IX	850 CD 4
11 May 98	CDTSC Letter to Base Concerning Comments on RI, Draft Interim Basewide Report, Characterization Summary, FSP, Parts 2e-2h, OU-E, OU-F, OU-G, OU-H	Adams, Randy S California Department of Toxic Substances Control	858 CD 4
22 Jun 98	EPA Letter to Base Concerning Comments on RI, Draft Interim Basewide Report, Characterization Summary, Parts 2e-2h, Appendix C1, OU-E, OU-F, OU-G, OU-H	Healy, Joseph B, Jr EPA Region IX	874 CD 3

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
29 Jun 98	CDTSC Letter to Base Concerning Comments on Draft Final Background Survey, RI Characterization Summary, FSP	Adams, Randy S California Department of Toxic Substances Control	888 CD 3
05 Aug 98	CRWQCB Letter to Base Concerning Comments on RI, Draft Final Interim Basewide Report, Characterization Summary, FSP, Parts 2e-2h	MacDonald, Alexander M California Regional Water Quality Control Board	1806 CD 7
10 Aug 98	CRWQCB Letter to Base Concerning Final FSP, OU-E, OU-F, OU-G, OU-H	MacDonald, Alexander M California Regional Water Quality Control Board	1819 CD 7
12 Aug 98	Technical Memorandum Report, Using On-Site-Only Sampling to Adequately Determine Radionuclide Background Concentrations	SM-ALC/EMR	943 CD 4
03 Sep 98	CDTSC Letter to Base Concerning Comments on Draft Final RI, Site Characterization Summaries and FSP	Adams, Randy S California Department of Toxic Substances Control	2970 CD 17
11 Sep 98	EPA Letter to Base Concerning Review Comments on Draft Final RI Characterization Summaries and FSP	Chang, James EPA Region IX	2961 CD 17
Oct 98	Final Site Characterization, FSP, Vol I of IV, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	899 CD 3
Oct 98	Final Site Characterization Summary, FSP, Vol II of IV, Appendix A, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	900 CD 3
Oct 98	Final Site Characterization Summary, FSP, Vol III of IV, Appendix B, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	901 CD 3

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Oct 98	Final Site Characterization Summary, FSP, Vol IV of IV, Appendix C, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	902 CD 3
27 Oct 98	EPA Letter to Base Concerning RI, Final Interim Basewide Report, Characterization Summary, FSP, OU-E, OU-F, OU-G, OU-H	Healy, Joseph B, Jr EPA Region IX	988 CD 4
02 Nov 98	CRWQCB Letter to Base Concerning Comments on RI, Final Interim Basewide Report, Characterization Summary, FSP, Part 2e-2h, OU-E, OU-F, OU-G, OU-H	MacDonald, Alexander M California Regional Water Quality Control Board	989 CD 4
03 Dec 98	CDTSC Letter to Base Concerning Comments on RI, Final Interim Basewide Report, Characterization Summary, OU-E, OU-F, OU-G, OU-H	Ward, Daniel T California Department of Toxic Substances Control	995 CD 4
Apr 99	RI, Final Audit Report, OU-E, OU-F, OU-G, OU-H	URS Greiner Woodward Clyde, Inc.	947 CD 4
11 Jun 99	CRWQCB Letter to Base Concerning Comments on RI, Draft Interim Basewide Report, Part 1 General Framework, Revision 2	MacDonald, Alexander M California Regional Water Quality Control Board	952 CD 4
18 Oct 99	EPA Letter to Base Concerning Draft, Interim Basewide RI Report, Part 2E, 2H and Characterization Summaries	Hanusiak, Lisa EPA Region IX	3694 CD 21
04 Nov 99	CDTSC Letter to Base Concerning Comments on Draft RI Characterization Summaries, OU-A, OU-B, OU-E, OU-F, OU-G, OU-H	Adams, Randy S California Department of Toxic Substances Control	3714 CD 21
13 Apr 00	CRWQCB Letter to Base Concerning Comments on Draft Supplemental EBS, Group 4	Taylor, James D California Regional Water Quality Control Board	3811 CD 22

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16 May 00	EPA Letter to Base Concerning Comments on Draft Final RI Report, Characterization Summaries, OU-E, OU-F, OU-G, OU-H	Healy, Joseph B, Jr EPA Region IX	3832 CD 22
Jun 00	RI, Final Basewide Report, Characterization Summaries 2, Parts 2E- 2H, Vol VIII of VIII, Appendix D, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	3844 CD 23
Jun 00	RI, Final Basewide Report, Characterization Summaries 2, Parts 2E- 2H, Vol VII of VIII, Appendix C1, C2-8, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	3843 CD 22
Jun 00	RI, Final Basewide Report, Characterization Summaries 2, Parts 2E- 2H, Vol VI of VIII, Appendix C1, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	3842 CD 22
Jun 00	RI, Final Basewide Report, Characterization Summaries 2, Parts 2E- 2H, Vol V of VIII, Appendix B, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	3841 CD 22
Jun 00	RI, Final Basewide Report, Characterization Summaries 2, Parts 2E- 2H, Vol IV of VIII, Appendix A, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	3840 CD 22
Jun 00	RI, Final Basewide Report, Characterization Summaries 2, Parts 2E- 2H, Vol III of VIII, Appendix A, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	3839 CD 22
Jun 00	RI, Final Basewide Report, Characterization Summaries 2, Parts 2E- 2H, Vol II of VIII, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	3838 CD 22
Jun 00	RI, Final Basewide Report, Characterization Summaries 2, Parts 2E- 2H, Vol I of VIII, OU-E, OU-F, OU-G, OU-H	Jacobs Engineering Group, Inc.	3837 CD 23

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
28 Jun 00	CRWQCB Letter to Base Concerning No Further Comments, Draft Final Supplemental EBS, Group 4	Taylor, James D California Regional Water Quality Control Board	3858 CD 23
Jul 00	Final Supplemental Environmental Baseline Survey (EBS), Group 4	Radian, Corp.	3866 CD 23
30 Aug 00	Supplemental FOSL, Group 4 Facilities	Lowas, Albert F, Jr AFBCA/DM McClellan	4328 CD 26
22 Jan 01	CDTSC Memo Concerning Comments on Human Health Risk Assessment Procedures, OU-A, OU-C, OU-E, OU-F, OU-G, OU-H	Renzi, Barbara California Department of Toxic Substances Control	4119 CD 24
31 Jan 01	CDTSC Letter to Base Concerning Comments on Human Health Risk Assessment, OU-A, OU-B, OU-C, OU-D, OU-E, OU-F, OU-G, OU-H	Malinowski, Mark California Department of Toxic Substances Control	4118 CD 24
25 Jun 01	EPA Letter to Base Concerning Comments on Final RI Audit Report, OU-E, OU-F, OU-G, OU-H	Healy, Joseph B, Jr EPA Region IX	4209 CD 24
08 Nov 02	Administrative Record File Index	LABAT-ANDERSON INCORPORATED	01 CD 1

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
Feb 89	RI, Stage 5, Work Plan, Area B	Radian, Corp.	1350 CD 6
31 Mar 89	CDHS Letter to Base Concerning Position on RI/FS Related Topics	Siebal, Val F California Department of Health Services	1365 CD 6
14 Jul 89	CRWQCB Letter to Base Concerning RI, Groundwater, Area B	MacDonald, Alexander M California Regional Water Quality Control Board	1401 CD 6
18 Jul 89	CDHS Letter to Base Concerning Removal Action, Area B	Landis, Anthony J California Department of Health Services	1403 CD 6
19 Jul 89	Base Letter to Task Force Concerning Expedited Response Action, Area B	Brunner, Paul G 2852 CES/EM	1404 CD 6
10 Aug 89	CDHS Letter to Base Concerning Emergency Response Action, OU-B	Siebal, Val F California Department of Health Services	1417 CD 20
18 Aug 89	EPA Letter to Base Concerning Proposed Emergency Response Action, OU-B	Mitani, Lewis EPA Region IX	1418 CD 20
Sep 89	Fact Sheet, Response Action Starts, OU-B	2852 CES/EM	1422 CD 20
13 Sep 89	Base Letter to Task Force Members Concerning Expedited Response Action Beginning, OU-B	Lawell, J Thomas, Col 2852 CES/EM	1427 CD 20
16 Oct 89	CDHS Letter to Base Concerning Review of RI and EE/CA Waste Transportation and Disposal Plan, OU-B	Landis, Anthony J California Department of Health Services	1438 CD 7

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
28 Mar 90	CDHS Letter to Base Concerning ARARS and CEQA Requirements for Non-Time Critical Removal Action Project, OU-B	Landis, Anthony J California Department of Health Services	1496 CD 11
30 Mar 90	CRWQCB Letter to Base Concerning Preliminary Design Review for Expedited Removal Action, OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	1497 CD 11
04 Apr 90	Radian Letter to Base Concerning Transmittal of Deliverable Sequence 4	Gouge, Jack D Radian Corp.	1409 CD 6
12 Apr 90	Newspaper Article, "McClellan Environmental Task Force Meeting Set-Public Comment Sought"	The News	1510 CD 7
19 Apr 90	CRWQCB Letter to Base Concerning Comments on PA Summary Report, OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	1512 CD 7
01 Jun 90	CDHS Letter to Base Concerning Comments on Draft PA Summary Report, OU-B	Landis, Anthony J California Department of Health Services	1535 CD 7
12 Jun 90	Base Memo Concerning Public Comments on Expedited Action, OU-B	Findley, Keith G, Col SM-ALC/EM	1540 CD 7
15 Jun 90	EPA Letter to Base Transmitting Comments and Summary for Draft PA Summary Report, 06 Apr 90	Mitani, Lewis EPA Region IX	1542 CD 7
Jul 90	Soil Gas Investigation Work Plan, Sampling and Analysis, OU-B	Radian, Corp.	3494 CD 21
27 Jul 90	CRWQCB Letter to Base Concerning Review Comments on Soil Gas Investigation Report, OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	1562 CD 10

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
Aug 90	RI/FS, Stage 4, Planning Network Report	Radian, Corp.	1567 CD 10
14 Aug 90	Base Letter to Regulators Transmitting Response to Comments on PA Summary Report, OU-B	Ierardi, Mario E, Capt SM-ALC/EM	1570 CD 10
19 Sep 90	EPA Letter to Base Concerning Response to Comments on PA Summary Report, OU-B	Mitani, Lewis EPA Region IX	1582 CD 11
28 Sep 90	Base Letter to EPA Concerning EE/CA, OU-B	Ierardi, Mario E, Capt SM-ALC/EM	1586 CD 11
18 Oct 90	CDHS Letter to Base Concerning Mercury Contamination	Siebal, Val F California Department of Health Services	1594 CD 11
23 Oct 90	Base Letter to MAIPG Concerning Soil Gas Investigation, OU-B	Ierardi, Mario E, Capt SM-ALC/EM	1597 CD 11
Nov 90	Fact Sheet, The Facts, OU-B Expedited Response Action, No 4	SM-ALC/PA	1604 CD 11
29 Nov 90	CRWQCB Letter to Base Concerning EE/CA OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	1609 CD 11
29 Nov 90	EPA Letter to Base Concerning Comments on EE/CA, OU-B	Mitani, Lewis EPA Region IX	1610 CD 11
30 Nov 90	CDHS Letter to Base Concerning EE/CA, OU-B	Landis, Anthony J California Department of Health Services	1612 CD 11

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
Dec 90	Fact Sheet, The Facts, OU-B, EE/CA, No 6	SM-ALC/PA	1617 CD 11
Jan 91	Stage 3, EE/CA Layperson's Summary, OU-B	Radian, Corp.	1631 CD 11
29 Jan 91	Base Letter to EPA Concerning EE/CA- EA, OU-B	Findley, Keith G, Col SM-ALC/EM	1640 CD 11
Feb 91	Soil Gas Investigation, QA/QC Report, Vol I of III, OU-B	Radian, Corp.	1642 CD 10
Feb 91	Soil Gas Investigation, QA/QC Report, Vol II of III, OU-B	Radian, Corp.	1643 CD 11
Feb 91	Soil Gas Investigation, QA/QC Report, Vol III of III, OU-B	Radian, Corp.	1644 CD 11
Feb 91	Stage 3, EA, EE/CA, Final Report, Disposal and Reuse, OU-B	Radian, Corp.	1654 CD 7
04 Feb 91	CDHS Letter to SMAQMD Concerning Groundwater Extraction Program, OU-B	Landis, Anthony J California Department of Health Services	1656 CD 7
22 Feb 91	Governor's Office Letter to CHSD Concerning Groundwater Removal Action, OU-B	Nunenkamp, David C Governor's Office of Planning and Research	1660 CD 7
Mar 91	ROD, RI/FS, NFA, Stage 7, Final, OU-B	Radian, Corp.	1668 CD 7
01 Mar 91	CDHS Letter to Base Concerning EE/CA-EA, OU-B	Landis, Anthony J California Department of Health Services	1669 CD 7

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
01 Mar 91	Task Force Member Letter to Base Concerning EE/CA-EA Report	Yarbrough, Charles H City of Sacramento	1673 CD 7
02 Mar 91	MESS Letter to Base Concerning Removal Actions, OU-B	Fisher, Mary R McClellan Ecological Seepage Situation	1675 CD 7
04 Mar 91	USAF Letter to US Congress Concerning Comments on EE/CA, EA, OU-B	Wise, Sidney J, Col USAF	1676 CD 7
05 Mar 91	California Legislature Letter to Base Concerning Removal Action, OU-B	Connelly, Lloyd G California Legislature	1677 CD 7
07 Mar 91	Radian Letter to HSD/YAQ Concerning Submission of Deliverable Sequence 4	Gouge, Jack D Radian Corp.	1678 CD 7
11 Mar 91	MESS Letter to Base Concerning Position on Extracted Water Disposal Action, OU-B	McClellan Ecological Seepage Situation	288 CD 4
12 Mar 91	Radian Letter to HSD/YAQ Concerning EE/CA-EA, OU-B	Gouge, Jack D Radian Corp.	1681 CD 7
21 Mar 91	CRWQCB Letter to Base Concerning Soil Gas Investigation Summary Report, OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	1684 CD 7
Apr 91	RI, HSP, OU-B	Radian, Corp.	1687 CD 7
Apr 91	Fact Sheet, Environmental Action Update, "Cleanup Continues in OU-B	SM-ALC/PA	1692 CD 7
Apr 91	Stage 3, Final Action Memorandum, OU-B	Radian, Corp.	1693 CD 7

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
Apr 91	Stage 3, FONSI, EE/CA, EA and Removal Action Final Report, Disposal and Reuse, OU-B	Radian, Corp.	1697 CD 7
03 Apr 91	CRWQCB Letter to Base Concerning RI Sampling Plan, OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	1694 CD 7
24 Apr 91	Radian Letter to HSD/YAQ Transmitting EE/CA-EA Action Memorandum, OU-B	Gouge, Jack D Radian Corp.	1698 CD 7
30 Apr 91	CRWQCB Letter to Base Concerning Action Memorandum and FONSI, OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	1700 CD 7
02 May 91	EPA Letter to Base Concerning Review of Draft SAP, OU-B	Mitani, Lewis EPA Region IX	1705 CD 20
07 May 91	CDHS Letter to Base Concerning Extension for Review of RI SAP, OU-B	Landis, Anthony J California Department of Health Services	1709 CD 20
22 May 91	CDHS Letter to Base Concerning Final Action Memorandum, OU-B	Landis, Anthony J California Department of Health Services	1711 CD 20
Jun 91	Fact Sheet, The Facts, RI, OU-B, No 9	SM-ALC/PA	1721 CD 20
06 Jun 91	EPA Letter to Base Concerning Comments on RI, SAP, OU-B	Mitani, Lewis EPA Region IX	1722 CD 20
07 Jun 91	CDHS Letter to Base Concerning Comments on SAP, OU-B	Landis, Anthony J California Department of Health Services	1723 CD 20

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
24 Jun 91	Base Letter to EPA Concerning Signed Pages for Action Memorandum and FONSI	Findley, Keith G, Col SM-ALC/EM	1725 CD 20
29 Jul 91	CDTSC Letter to Base Concerning Comments on RI, Draft HSP, OU-B	Wang, David California Department of Toxic Substances Control	1746 CD 11
04 Sep 91	CRWQCB Letter to Base Concerning QAPP, OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	1775 CD 20
17 Sep 91	Base Letter to EPA Concerning RI, SAP, OU-B	Ierardi, Mario E, Capt SM-ALC/EM	1785 CD 20
18 Sep 91	CRWQCB Letter to Base Concerning RI, Draft Final SAP, OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	1786 CD 20
27 Sep 91	Base Letter to EPA Concerning RI, Final SAP, OU-B	Anderson, Elaine S SM-ALC/EM	1790 CD 7
30 Sep 91	EPA Letter to Base Concerning Extension for RI, SAP, OU-B	Mitani, Lewis EPA Region IX	1792 CD 7
Oct 91	PA, Stage 3, Summary Report, Vol I of III, OU-B	Radian, Corp.	1793 CD 7
Oct 91	PA, Stage 3, Summary Report, Vol II of III, OU-B	Radian, Corp.	1794 CD 7
Oct 91	PA, Stage 3, Summary Report, Vol III of III, OU-B	Radian, Corp.	1795 CD 7
Oct 91	RI, HSP, OU-B	Radian, Corp.	2974 CD 17

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01 Oct 91	CRWQCB Letter to Base Concerning Response to Comments, Draft SAP, OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	2972 CD 17
29 Oct 91	CDTSC Letter to Base Concerning RI SAP, OU-B	Wang, David California Department of Toxic Substances Control	2986 CD 17
31 Oct 91	EPA Letter to Base Concerning Summary of QAPP Revisions, OU-B	Mitani, Lewis EPA Region IX	2987 CD 17
Nov 91	RI, Stage 7, Final SAP, OU-B	Radian, Corp.	2989 CD 20
18 Nov 91	Base Letter to EPA Concerning RI, Final SAP, OU-B	Anderson, Elaine S SM-ALC/EMR	2997 CD 17
24 Dec 91	Base Letter to EPA Concerning Soil Gas Investigation, OU-B	Ierardi, Mario E, Capt SM-ALC/EM	1715 CD 20
Jan 92	Technical Memorandum, Soil Remedial Technologies Screening	Radian, Corp.	2182 CD 9
09 Jan 92	RI, Monthly Status Meeting, 12 Dec 91, OU-B	SM-ALC/EM	3282 CD 18
28 Jan 92	CRWQCB Letter to Base Concerning Extractable Total Petroleum Hydrocarbons and PCB Second Column Analyses, Request for Technical Variance	MacDonald, Alexander M California Regional Water Quality Control Board	1708 CD 20
28 Oct 92	CRWQCB Letter to Base Concerning Review of FSP, OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	2032 CD 8

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
04 Dec 92	CRWQCB Letter to Base Concerning Review of SAP Addendum FSP, OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	2050 CD 8
01 Feb 93	EPA Letter to Base Concerning Review of Consensus Statement on Background Constituents in Subsurface Soils	Moore, Katherine EPA Region IX	2073 CD 8
17 Feb 93	Consensus Statement, Background Inorganic Constituents in Subsurface Soils	Radian Corp.	2084 CD 8
Jun 94	RI, Interim Basewide Draft Report, Part 2B, Appendix A	Radian Corp.	2340 CD 20
Jun 94	RI, Interim Basewide Draft Report, Part 2B, Appendix C	Radian Corp.	2343 CD 13
Jun 94	RI, Interim Basewide Draft Report, Part 2B, RI Characterization Studies	Radian Corp.	2339 CD 12
Jun 94	RI, Interim Basewide Draft Report, Part 1, General Framework	Radian Corp.	2338 CD 12
Jun 94	RI, Interim Basewide Draft Report, Part 2B, Appendix A (Continued)	Radian Corp.	2341 CD 12
Jun 94	RI, Interim Basewide Draft Report, Part 2B, Appendix D	Radian Corp.	2344 CD 13
Jun 94	RI, Interim Basewide Draft Report, Part 2B, Appendix B (Continued)	Radian Corp.	2342 CD 13
07 Jul 94	CRWQCB Letter to Base Concerning Comments on Interim RI Basewide Draft Report Part 1 General Framework	MacDonald, Alexander M California Regional Water Quality Control Board	2372 CD 13

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Aug 94	Basewide Ecological Risk Assessment Final Scoping Report, OU-B, OU-D	Jacobs Engineering Group, Inc.	2398 CD 8
04 Aug 94	CDTSC Letter to Base Concerning Comments on RI Interim Basewide Draft Report, General Framework	Malinowski, Mark California Department of Toxic Substances Control	2409 CD 8
04 Aug 94	EPA Letter to Base Concerning Review Comments on RI Interim Basewide Draft Report	Healy, Joseph B, Jr EPA Region IX	2410 CD 8
16 Aug 94	CDTSC Letter to Base Concerning Comments on Basewide Ecological Risk Assessment Draft Final Scoping Report, OU-B, OU-D	Harris, John California Department of Toxic Substances Control	2420 CD 8
25 Aug 94	CRWQCB Letter to Base Concerning Comments on Basewide Ecological Risk Assessment Draft SAP, OU-B, OU-D	MacDonald, Alexander M California Regional Water Quality Control Board	2424 CD 8
Oct 94	RI, Interim Basewide Draft Final Report, Part 1, General Framework	Radian Corp.	2449 CD 15
Nov 94	RI, Interim Basewide Final Report, Part 1, General Framework	Radian Corp.	2480 CD 13
14 Nov 94	EPA Letter to Base Concerning Review Comments on RI Interim Basewide Draft Final Report	Healy, Joseph B, Jr EPA Region IX	2482 CD 13
27 Jan 95	CRWQCB Letter to Base Concerning Interim RI Basewide Draft Report for Part 1 General Framework Appendices A-E	MacDonald, Alexander M California Regional Water Quality Control Board	2537 CD 14
01 Mar 95	CRWQCB Letter to Base Concerning Draft Basewide Interim RI Characterization Summaries Part 2B, OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	2563 CD 14

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14 Mar 95	EPA Letter to Base Concerning Review Comments on Draft Appendices for Basewide Interim RI Part 1	Healy, Joseph B, Jr EPA Region IX	2581 CD 14
14 Mar 95	EPA Letter to Base Concerning Review Comments on Basewide Draft Interim RI Characterization Summary Part 2B, OU-B	Healy, Joseph B, Jr EPA Region IX	2582 CD 14
20 Mar 95	CRWQCB Letter to Base Concerning Comments on Basewide Interim RI Draft Report, Part 1, Appendix F	MacDonald, Alexander M California Regional Water Quality Control Board	2585 CD 14
23 Mar 95	EPA Letter to Base Concerning Comments on Interim RI Basewide Draft Report, Part 1, Appendix E	Healy, Joseph B, Jr EPA Region IX	2586 CD 14
30 Mar 95	EPA Letter to Base Concerning Radiation Issues, Investigations and Cleanup	Healy, Joseph B, Jr EPA Region IX	2595 CD 14
03 Apr 95	CDTSC Letter to Base Concerning Comments on RI Characterization Summaries Basewide Draft Report, OU-B	Malinowski, Mark California Department of Toxic Substances Control	2611 CD 14
Jul 95	Update Pages, RI, Interim Basewide Draft Final Report, Characterization Summaries, Part 2B, Appendix C, OU-B	Radian Corp.	2675 CD 15
Jul 95	Update Pages, RI, Interim Basewide Draft Final Report, Part 1 General Framework, Appendices A Through C, E, F	Radian Corp.	2676 CD 15
Jul 95	RI, Interim Basewide Draft Final Report, Characterization Summaries, Part 2B Continued, OU-B	Radian Corp.	2678 CD 15
02 Aug 95	CRWQCB Letter to Base Concerning Comments on RI Characterization Summary Part 2B, OU-B	MacDonald, Alexander M California Regional Water Quality Control Board	2707 CD 15

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03 Aug 95	EPA Letter to Base Concerning Comments on Draft Final Appendices to Basewide Interim RI	Healy, Joseph B, Jr EPA Region IX	2712 CD 15
03 Aug 95	EPA Letter to Base Concerning Comments on Draft Final RI Characterization Summaries, OU-B	Healy, Joseph B, Jr EPA Region IX	2713 CD 15
17 Aug 95	CDTSC Letter to Base Concerning Comments on Draft Final RI Characterization Summary, OU-B	Malinowski, Mark California Department of Toxic Substances Control	2724 CD 15
28 Sep 95	Base Memo Concerning Release Dates of RI Characterization Summaries, IC-31, OU-B	Schmalz, Kirk L SM-ALC/EMR	2761 CD 15
07 Nov 95	EPA Letter to Base Concerning Comments on Basewide Interim RI Report Updating Process	Healy, Joseph B, Jr EPA Region IX	2810 CD 16
Dec 95	RI, Interim Basewide Final Report, Characterization Summaries, Part 2B, Vol I of IX, OU-B	Radian Corp.	2826 CD 16
Dec 95	RI, Interim Basewide Final Report, Characterization Summaries, Part 2B, Vol II of IX, OU-B	Radian Corp.	2827 CD 16
Dec 95	RI, Interim Basewide Final Report, Characterization Summaries, Part 2B, Vol III of IX, Appendix A, OU-B	Radian Corp.	2828 CD 16
Dec 95	RI, Interim Basewide Final Report, Characterization Summaries, Part 2B, Vol IV of IX, Appendix A, OU-B	Radian Corp.	2829 CD 16
Dec 95	RI, Interim Basewide Final Report, Characterization Summaries, Part 2B, Vol V of IX, Appendix B, OU-B	Radian Corp.	2830 CD 16

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Dec 95	RI, Interim Basewide Final Report, Characterization Summaries, Part 2B, Vol VI of IX, Appendix B, OU-B	Radian Corp.	2831 CD 16
Dec 95	RI, Interim Basewide Final Report, Characterization Summaries, Part 2B, Vol VII of IX, Appendix B, OU-B	Radian Corp.	2832 CD 16
Dec 95	RI, Interim Basewide Final Report, Characterization Summaries, Part 2B, Vol VIII of IX, Appendix C, OU-B	Radian Corp.	2833 CD 20
Dec 95	RI, Interim Basewide Final Report, Characterization Summaries, Part 2B, Vol IX of IX, Appendix D, OU-B	Radian Corp.	2834 CD 20
01 Dec 95	Base Memo Concerning Final RI Characterization Summary Submittal, OU-B	Schmalz, Kirk L SM-ALC/EMR	2825 CD 16
15 Dec 95	RI, Interim Basewide Final Report, General Framework, Appendices A Through C, E, F, OU-B	Radian Corp.	2855 CD 17
19 Dec 95	CRWQCB Letter to Base Concerning Comments on Final Basewide Ecological Risk Assessment Summary Scoping Report	MacDonald, Alexander M California Regional Water Quality Control Board	2859 CD 17
14 Feb 96	CDTSC Letter to Base Concerning CDTSC Comments on Final Basewide EA Summary Scoping Report, OU-A, OU-B, OU-C, OU-D	Malinowski, Mark California Department of Toxic Substances Control	3032 CD 17
Nov 96	RI, Draft Interim Basewide Report, Revision 1	Radian, Corp.	3198 CD 18
07 Feb 97	CRWQCB Letter to Base Concerning Comments on RI, Draft Interim Basewide Report, General Framework, Revision 1	MacDonald, Alexander M California Regional Water Quality Control Board	3262 CD 19

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10 Feb 97	EPA Letter to Base Concerning Comments on RI, Draft Interim Basewide Update	Healy, Joseph B, Jr EPA Region IX	3264 CD 19
20 Feb 97	CDTSC Letter to Base Concerning Comments on RI, Draft Interim Basewide Report, Part 1: General Framework, Appendix I	Adams, Randy S California Department of Toxic Substances Control	3276 CD 18
03 Apr 97	CRWQCB Letter to Base Concerning Comments on RI, Draft Final Interim Basewide Report, Revision 1	MacDonald, Alexander M California Regional Water Quality Control Board	3319 CD 18
14 Apr 97	CDTSC Letter to Base Concerning Comments on RI, Draft Final Interim Basewide Report, Part 1	Adams, Randy S California Department of Toxic Substances Control	3327 CD 18
23 Apr 97	EPA Letter to Base Concerning Comments on RI, Draft Final Interim Update	Healy, Joseph B, Jr EPA Region IX	3334 CD 18
30 Apr 97	EPA Letter to Base Concerning Comments on Removal Action Work Plan, Basewide SVE	Chang, James EPA Region IX	3337 CD 18
07 May 97	Base Letter to Regulators Concerning Appropriate Modeling to Determine Potential Water Quality Impacts From Metals Contaminated Soil	Anderson, Elaine S SM-ALC/EMR	3339 CD 18
14 May 97	EPA Letter to Base Concerning Letter on Appropriate Modeling to Determine Potential Water Quality Impacts From Metals Contaminated Soil	Healy, Joseph B, Jr EPA Region IX	3342 CD 18
27 May 97	CRWQCB Letter to Base Concerning Comments on Appropriate Modeling to Determine Potential Water Quality Impacts From Metals Contaminated Soils	MacDonald, Alexander M California Regional Water Quality Control Board	3348 CD 18

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28 May 97	CRWQCB Letter to Base Concerning Comments on Appropriate Modeling to Determine Potential Water Quality Impacts From Metals Contaminated Soils	MacDonald, Alexander M California Regional Water Quality Control Board	3349 CD 18
Jun 97	Final Ecological Risk Assessment Strategy Report	Radian, Corp.	3354 CD 19
Jun 97	RI, Final Interim Basewide Report, Part 1, Vol I of II, Revision 1	Radian, Corp.	3355 CD 19
Jun 97	RI, Final Interim Basewide Report, Part 1, Vol II of II, Appendices, Revision 1	Radian, Corp.	3356 CD 19
30 Jul 97	CRWQCB Letter to Base Concerning Comments on RI, Final Interim Basewide Report, Part 1, Revision 1	MacDonald, Alexander M California Regional Water Quality Control Board	3401 CD 19
14 Nov 97	CRWQCB Letter to Base Concerning Final Summary Report	MacDonald, Alexander M California Regional Water Quality Control Board	3484 CD 20
Jan 98	Fact Sheet, Environmental Action Update, 98 Proposed Removal Actions for Low Level Radiation Sites	SM-ALC/PAE	642 CD 2
28 Jan 98	Radian Letter to Base Concerning Final Environmental Action Update, 98 Proposed Removal Actions for Low Level Radiation Sites	Hartung, Kerri, L M Radian, Corp.	1868 CD 7
03 Feb 98	EPA Letter to Base Transmitting Comments on Draft Basewide Removal Action Work Plan, SVE	Chang, James EPA Region IX	2794 CD 16
23 Feb 98	EPA Letter to Base Concerning RAR Living Review Comments on RI, Draft Interim Basewide Report, Part 1	Healy, Joseph B, Jr EPA Region IX	268 CD 2

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26 Feb 98	EPA Letter to Base Concerning RAR Living Review Comments on RI, Draft Interim Basewide Report	Healy, Joseph B, Jr EPA Region IX	270 CD 2
03 Mar 98	EPA Letter to Base Transmitting RAR Living Review Comments on RI, Draft Interim Basewide Report, Part 1	Healy, Joseph B, Jr EPA Region IX	273 CD 2
Apr 98	Final Basewide Removal Action Work Plan, SVE	URS Greiner, Inc.	823 CD 4
08 Apr 98	CRWQCB Letter to Base Concerning Basewide Removal Action Work Plan, SVE	MacDonald, Alexander M California Regional Water Quality Control Board	832 CD 4
01 May 98	EPA Letter to Base Concerning RAR Living Comments on RI, Interim Basewide Report, Part 1	Healy, Joseph B, Jr EPA Region IX	850 CD 4
10 Jun 98	Base Memo Concerning Radioisotope Committee Permits for Radiological Sites	Woodson, Robert J SM-ALC/EMR	880 CD 3
10 Aug 98	EPA Letter to Base Concerning Review Comments on Draft Final Data Gap 2 FSP	Healy, Joseph B, Jr EPA Region IX	2954 CD 17
14 Aug 98	CDTSC Letter to Base Concerning Comments on Draft Final Data Gap 2 FSP	Adams, Randy S California Department of Toxic Substances Control	2956 CD 17
20 Aug 98	EPA Letter to Base Concerning Comments on Draft Annotated Outline, RI General Framework Update	Healy, Joseph B, Jr EPA Region IX	1815 CD 7
31 Aug 98	CRWQCB Letter to Base Concerning Comments on Final Data Gap 1 FSP and Summary Reports	MacDonald, Alexander M California Regional Water Quality Control Board	2966 CD 17

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Sep 98	Final Data Gap FSP 2	Radian, Corp.	898 CD 12
02 Sep 98	CDTSC Letter to Base Concerning Comments on Draft Passive SVE and Data Gap 1 FSP Revised Sites	Adams, Randy S California Department of Toxic Substances Control	2968 CD 17
23 Mar 99	CRWQCB Letter to Base Concerning Comments on Draft Data Gap FSP 4	MacDonald, Alexander M California Regional Water Quality Control Board	1984 CD 8
12 Apr 99	EPA Letter to Base Concerning Review Comments on Draft Data Gap 4 FSP	Healy, Joseph B, Jr EPA Region IX	2886 CD 17
13 Apr 99	CDTSC Letter to Base Concerning Comments on Draft Basewide Data Gap FSP 4	Adams, Randy S California Department of Toxic Substances Control	1994 CD 8
09 Jun 99	CDTSC Letter to Base Concerning Comments on RI, Draft Interim Basewide Report, General Framework, Revision 2	Adams, Randy S California Department of Toxic Substances Control	951 CD 4
10 Jun 99	EPA Letter to Base Concerning Review Comments on Interim RI Basewide Draft Report Part 1 General Framework Update	Hanusiak, Lisa EPA Region IX	2907 CD 17
11 Jun 99	CRWQCB Letter to Base Concerning Comments on RI, Draft Interim Basewide Report, Part 1 General Framework, Revision 2	MacDonald, Alexander M California Regional Water Quality Control Board	952 CD 4
15 Jun 99	EPA Letter to Base Concerning Review Comments on Draft Interim Basewide RI Report, Part 1 General Framework Update	Hanusiak, Lisa EPA Region IX	2899 CD 17

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22 Jun 99	Base Memo Concerning Response to Comments and Update Pages for Draft Data Gap FSP	Mook, Philip H, Jr SM-ALC/EMR	2885 CD 17
01 Jul 99	CRWQCB Letter to Base Concerning Comments on Draft Data Gap FSP 4	MacDonald, Alexander M California Regional Water Quality Control Board	3631 CD 21
06 Jul 99	EPA Letter to Base Concerning Response to Comments on Draft Data Gap, FSP 4	Hanusiak, Lisa EPA Region IX	3637 CD 21
16 Aug 99	CDTSC Letter to Base Concerning Comments on Draft Final Basewide Data Gap FSP 4	Adams, Randy S California Department of Toxic Substances Control	1997 CD 8
20 Aug 99	EPA Letter to Base Concerning Draft Final Data Gap, FSP 4	Hanusiak, Lisa EPA Region IX	3655 CD 22
Sep 99	Final Data Gap FSP 4	Radian, Corp.	2920 CD 17
Sep 99	Final QAPP Addendum, Basewide Data Gap 4 Investigation	Jacobs Engineering Group, Inc.	2921 CD 17
May 00	Final Work Implementation Plan, OU-B	Radian, Corp.	3823 CD 22
02 Feb 01	CRWQCB Letter to Base Concerning Comments on Draft Data Gaps, RI Characterization Summaries, Addendum Report, OU-B	Taylor, James D California Regional Water Quality Control Board	4122 CD 24
10 Apr 01	EPA Letter to Base Concerning Comments on Draft, Interim RI Report, Characterization Summaries and Addenda, OU-B	Healy, Joseph B, Jr EPA Region IX	4174 CD 24

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04 Jun 01	CDTSC Memo Concerning Comments on Draft Data Gap, RI Characterization Summaries Report, Addendum, OU-B	Depies, Kevin California Department of Toxic Substances Control	4226 CD 25
02 Jul 01	Initial Parcel FS Meeting Minutes, 11 Jun 01	CH2M Hill	4219 CD 25
26 Jul 01	CDTSC Letter to Base Concerning Comments on Draft Data Gaps RI Characterization Addendum, OU-B	Malinowski, Mark California Department of Toxic Substances Control	4225 CD 25
07 Jan 02	CDTSC Letter to Distribution Concerning Request for ARAR Requirements for Initial Parcel FS	Depies, Kevin California Department of Toxic Substances Control	4370 CD 26
19 Mar 02	CRWQCB Letter to CDTSC Transmitting ARARs for Soil Remediation, Initial Parcel FS	Taylor, James D California Regional Water Quality Control Board	4407 CD 26
22 Mar 02	CDTSC Letter to Base Concerning Potential ARARs, Initial Parcel FS	Depies, Kevin California Department of Toxic Substances Control	4414 CD 26
20 May 02	Final Initial Parcel Data Gaps FSP and HSP	CH2M Hill	4450 CD 26
20 May 02	CDTSC Letter to Base Concerning Comments on Draft Initial Parcel Data Gaps FSP	Depies, Kevin California Department of Toxic Substances Control	4464 CD 26
30 May 02	CDTSC Letter to Base Concerning Concurrence on Final Initial Parcel, Data Gaps FSP and HSP	Depies, Kevin California Department of Toxic Substances Control	4471 CD 26
08 Nov 02	Administrative Record File Index	LABAT-ANDERSON INCORPORATED	01 CD 1

Administrative Record for SA 035

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Aug 90	RI/FS, Stage 4, Planning Network Report	Radian, Corp.	1567 CD 10
Mar 91	ROD, RI/FS, Stage 7, Final, UST Program	Radian, Corp.	1667 CD 7
14 Feb 92	EPA Letter to Base Concerning Comments on Draft SAP, Soil Bioremediation Treatability Study, Draft QAPP, Addendum	Mendoza, Ramon C EPA Region IX	1879 CD 7
23 Sep 92	Technical Memorandum Report, Bench-Scale Slurry Biotreatment Studies, Treatability Study, Task 7	CH2M Hill	3496 CD 21
19 Oct 92	Technical Memorandum Report, Results of Biofilter Laboratory Studies, Treatability Study, Task 8	CH2M Hill	3497 CD 21
19 Nov 92	CRWQCB Letter to Base Concerning UST Program and Addition of Sites	MacDonald, Alexander M California Regional Water Quality Control Board	2042 CD 8
Oct 93	Final Bioremediation Treatability Study Report, Vol II of II	CH2M Hill	2204 CD 9
Oct 93	Final Bioremediation Treatability Study Report, Vol I of II	CH2M Hill	2203 CD 9
Jul 94	Working Draft Technical Memorandum, UST Closure Certification	Radian Corp.	2367 CD 13
10 Aug 94	CRWQCB Letter to Base Concerning Comments on Basewide Ecological Risk Assessment Draft Scoping Report, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	2415 CD 8

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16 Sep 94	CRWQCB Letter to Base Concerning Draft Final Scoping Report for Basewide Ecological Risk Assessment, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	2443 CD 15
23 Sep 94	CDTSC Letter to Base Concerning Comments on Scoping Report for Basewide Ecological Risk Assessment, OU-A	Harris, John California Department of Toxic Substances Control	2446 CD 15
Oct 94	Basewide Ecological Risk Assessment Final Scoping Report, OU-A	Jacobs Engineering Group, Inc.	2472 CD 21
13 Oct 94	CRWQCB Letter to Base Concerning Draft UST Closure Certification Report	MacDonald, Alexander M California Regional Water Quality Control Board	2463 CD 13
01 Nov 94	CRWQCB Letter to Base Concerning Comments on Draft Site Characterization Summaries, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	2479 CD 13
02 Dec 94	CDTSC Letter to Base Concerning Comments on Final Ecological Risk Assessment Scoping Report, OU-A	Harris, John California Department of Toxic Substances Control	2504 CD 14
May 95	RI, Interim Basewide Draft Report, Site Characterization Summary and FSP, Part 2A, Vol I of VI, OU-A	Jacobs Engineering Group, Inc.	2634 CD 14
May 95	RI, Interim Basewide Draft Report, Site Characterization Summary and FSP, Part 2A, Vol II of VI, OU-A	Jacobs Engineering Group, Inc.	2635 CD 14
May 95	RI, Interim Basewide Draft Report, Site Characterization Summary and FSP, Part 2A, Vol III of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2636 CD 15

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May 95	RI, Interim Basewide Draft Report, Site Characterization Summary and FSP, Part 2A, Vol IV of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2637 CD 15
May 95	RI, Interim Basewide Draft Report, Site Characterization Summary and FSP, Part 2A, Vol V of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2638 CD 15
May 95	RI, Interim Basewide Draft Report, Site Characterization Summary and FSP, Part 2A, Vol VI of VI, Appendices B-D, OU-A	Jacobs Engineering Group, Inc.	2639 CD 15
30 Jun 95	EPA Letter to Base Concerning Comments on Interim RI Basewide Draft Report Part 2A, OU-A	Healy, Joseph B, Jr EPA Region IX	2674 CD 15
03 Jul 95	CRWQCB Letter to Base Concerning Comments on RI Draft FSP, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	2680 CD 15
05 Jul 95	CDTSC Letter to Base Concerning Comments on Draft Site Characterization Summaries and FSP, OU-A	Malinowski, Mark California Department of Toxic Substances Control	2682 CD 15
27 Sep 95	CRWQCB Letter to Base Concerning Comments on Draft Final RI FSP, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	2758 CD 15
27 Sep 95	CDTSC Letter to Base Concerning Comments on Draft Final Site Characterization Summaries and FSP, OU-A	Malinowski, Mark California Department of Toxic Substances Control	2759 CD 15
12 Oct 95	EPA Letter to Base Concerning Comments on Draft Final Site Characterization Summary and FSP, OU-A	Healy, Joseph B, Jr EPA Region IX	2775 CD 16

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Nov 95	RI, Interim Basewide Final Report, Site Characterization Summary and FSP, Part 2A, Vol I of VI, OU-A	Jacobs Engineering Group, Inc.	2795 CD 16
Nov 95	RI, Interim Basewide Final Report, Site Characterization Summary and FSP, Part 2A, Vol II of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2796 CD 16
Nov 95	RI, Interim Basewide Final Report, Site Characterization Summary and FSP, Part 2A, Vol III of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2797 CD 16
Nov 95	RI, Interim Basewide Final Report, Site Characterization Summary and FSP, Part 2A, Vol IV of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2798 CD 16
Nov 95	RI, Interim Basewide Final Report, Site Characterization Summary and FSP, Part 2A, Vol V of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2799 CD 16
Nov 95	RI, Interim Basewide Final Report, Site Characterization Summary and FSP, Part 2A, Vol VI of VI, Appendices B-D, OU-A	Jacobs Engineering Group, Inc.	2800 CD 16
16 Nov 95	Base Memo Concerning Final Site Characterization Summary and FSP Submittal, OU-A	Schmalz, Kirk L SM-ALC/EMR	2815 CD 16
19 Dec 95	CRWQCB Letter to Base Concerning Comments on Final Basewide Ecological Risk Assessment Summary Scoping Report	MacDonald, Alexander M California Regional Water Quality Control Board	2859 CD 17
14 Feb 96	CDTSC Letter to Base Concerning CDTSC Comments on Final Basewide EA Summary Scoping Report, OU-A, OU-B, OU-C, OU-D	Malinowski, Mark California Department of Toxic Substances Control	3032 CD 17

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03 Oct 96	CRWQCB Letter to Base Concerning Phase II RI/FS, FSP Report, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	3182 CD 18
Nov 96	RI, Draft Interim Basewide Report, Revision 1	Radian, Corp.	3198 CD 18
03 Apr 97	CRWQCB Letter to Base Concerning Comments on RI, Draft Final Interim Basewide Report, Revision 1	MacDonald, Alexander M California Regional Water Quality Control Board	3319 CD 18
30 Apr 97	EPA Letter to Base Concerning Comments on Removal Action Work Plan, Basewide SVE	Chang, James EPA Region IX	3337 CD 18
Jun 97	Final Ecological Risk Assessment Strategy Report	Radian, Corp.	3354 CD 19
Jun 97	RI, Final Interim Basewide Report, Part 1, Vol I of II, Revision 1	Radian, Corp.	3355 CD 19
Jun 97	RI, Final Interim Basewide Report, Part 1, Vol II of II, Appendices, Revision 1	Radian, Corp.	3356 CD 19
14 Jul 97	Base Memo Concerning Risk Assessment, OU-A, OU-C	Anderson, Elaine S SM-ALC/EMR	3387 CD 19
30 Jul 97	CRWQCB Letter to Base Concerning Comments on RI, Final Interim Basewide Report, Part 1, Revision 1	MacDonald, Alexander M California Regional Water Quality Control Board	3401 CD 19
Oct 97	Fact Sheet, Environmental Action Update, UST Program Finishes Phase I	SM-ALC/PA	3472 CD 19
03 Feb 98	EPA Letter to Base Transmitting Comments on Draft Basewide Removal Action Work Plan, SVE	Chang, James EPA Region IX	2794 CD 16

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
23 Feb 98	EPA Letter to Base Concerning RAR Living Review Comments on RI, Draft Interim Basewide Report, Part 1	Healy, Joseph B, Jr EPA Region IX	268 CD 2
26 Feb 98	EPA Letter to Base Concerning RAR Living Review Comments on RI, Draft Interim Basewide Report	Healy, Joseph B, Jr EPA Region IX	270 CD 2
03 Mar 98	EPA Letter to Base Transmitting RAR Living Review Comments on RI, Draft Interim Basewide Report, Part 1	Healy, Joseph B, Jr EPA Region IX	273 CD 2
Apr 98	Final Basewide Removal Action Work Plan, SVE	URS Greiner, Inc.	823 CD 4
08 Apr 98	CRWQCB Letter to Base Concerning Basewide Removal Action Work Plan, SVE	MacDonald, Alexander M California Regional Water Quality Control Board	832 CD 4
01 May 98	EPA Letter to Base Concerning RAR Living Comments on RI, Interim Basewide Report, Part 1	Healy, Joseph B, Jr EPA Region IX	850 CD 4
16 Jun 98	EPA Letter to Base Concerning Comments on Draft Basewide Data Gap FSP, Vol 2	Healy, Joseph B, Jr EPA Region IX	872 CD 3
27 Aug 98	CRWQCB Letter to Base Concerning Comments on Draft Final RI Characterization Summaries, Part 2A	MacDonald, Alexander M California Regional Water Quality Control Board	2967 CD 17
18 Sep 98	CDTSC Letter to Base Concerning Comments on Draft Final RI Characterization Summaries, Part 2A	Adams, Randy S California Department of Toxic Substances Control	2960 CD 17
26 Oct 98	EPA Letter to Base Concerning Comments on Draft Data Gap FSP 3	Healy, Joseph B, Jr EPA Region IX	971 CD 4

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
27 Oct 98	CDTSC Letter to Base Concerning Comments on Draft Basewide Data Gaps FSP 3	Adams, Randy S California Department of Toxic Substances Control	969 CD 4
20 Nov 98	CRWQCB Letter to Base Concerning RI, Draft Final Interim Basewide Report, Characterization Summary, Part 2a	MacDonald, Alexander M California Regional Water Quality Control Board	976 CD 4
26 Jan 99	CRWQCB Letter to Base Concerning Approval of Draft Final Basewide Data Gaps 3, FSP	MacDonald, Alexander M California Regional Water Quality Control Board	1961 CD 8
Mar 99	Update Pages, Final Basewide Data Gap, FSP 3	Jacobs Engineering Group, Inc.	929 CD 3
Mar 99	Final Basewide Data Gap FSP 3, OU-A	Jacobs Engineering Group, Inc.	3609 CD 21
17 May 99	CRWQCB Letter to Base Concerning Comments on Draft EE/CA, SVE, IC-25	MacDonald, Alexander M California Regional Water Quality Control Board	1999 CD 8
09 Jun 99	CDTSC Letter to Base Concerning Review of Draft EE/CA for SVE at IC-25 and IC-43, OU-A	Adams, Randy S California Department of Toxic Substances Control	2905 CD 17
11 Jun 99	CRWQCB Letter to Base Concerning Comments on RI, Draft Interim Basewide Report, Part 1 General Framework, Revision 2	MacDonald, Alexander M California Regional Water Quality Control Board	952 CD 4
01 Jul 99	EPA Letter to Base Concerning Comments on Draft EE/CA, SVE, Revision 0, IC-25	Hanusiak, Lisa EPA Region IX	3630 CD 21

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
14 Sep 99	CRWQCB Letter to Base Concerning Comments on Final Draft EE/CA, SVE, IC-25	MacDonald, Alexander M California Regional Water Quality Control Board	3664 CD 21
16 Sep 99	EPA Letter to Base Concerning Review of Comments on Final Draft EE/CA, SVE, IC-25	Hanusiak, Lisa EPA Region IX	3670 CD 21
21 Sep 99	CDTSC Letter to Base Concerning No Further Comments on Final Draft EE/CA, SVE System	Adams, Randy S California Department of Toxic Substances Control	3672 CD 21
29 Sep 99	CRWQCB Letter to Base Concerning Comments on Draft EE/CA for SVE, IC-25	MacDonald, Alexander M California Regional Water Quality Control Board	3677 CD 21
Oct 99	Final EE/CA, SVE Report, IC-25	URS Greiner Woodward Clyde, Inc.	3681 CD 21
21 Oct 99	CRWQCB Letter to Base Concerning No Further Comments on Final EE/CA, SVE Report, IC-25	MacDonald, Alexander M California Regional Water Quality Control Board	3702 CD 21
13 Mar 00	Final Action Memorandum, SVE, IC-25	SM-ALC/EMR	3787 CD 22
30 May 00	CDTSC Letter to Base Concerning Comments on Draft Removal Action Work Plan, Design and Risk Assessment, IC-25, IC-27	Kilgore, William California Department of Toxic Substances Control	3834 CD 22
25 Aug 00	CRWQCB Letter to Base Concerning No Further Action, UST, Bldg 1058	MacDonald, Alexander M California Regional Water Quality Control Board	3892 CD 22

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
28 Aug 00	CRWQCB Letter to Base Concerning Comments on Draft Final Removal Action Work Plan, 90% Design Document, IC-25	Taylor, James D California Regional Water Quality Control Board	3895 CD 22
28 Aug 00	CRWQCB Letter to Base Concerning No Further Action, UST, Bldg 1032	MacDonald, Alexander M California Regional Water Quality Control Board	3893 CD 22
06 Sep 00	CRWQCB Letter to Base Concerning Comments on Draft Supplemental EBS, Group 6	Taylor, James D California Regional Water Quality Control Board	3900 CD 22
11 Sep 00	CDTSC Letter to Base Concerning Draft Final Removal Action Work Plan, IC-25	Kilgore, William California Department of Toxic Substances Control	3906 CD 22
19 Sep 00	CRWQCB Memo Concerning Beneficial Use, Protective Water Quality Limits, Petroleum-Based Fuels	Marshack, Jon B California Regional Water Quality Control Board	4248 CD 24
20 Nov 00	CRWQCB Letter to Base Concerning Comments on Draft Final Supplemental EBS, Group 6	Taylor, James D California Regional Water Quality Control Board	3961 CD 23
Dec 00	Final Supplemental Environmental Baseline Survey (EBS), Vol II of II, Appendices A-F, Group 6	URS Greiner Woodward Clyde, Inc.	3964 CD 23
Dec 00	Final Supplemental Environmental Baseline Survey (EBS), Vol I of II, Group 6	URS Greiner Woodward Clyde, Inc.	3963 CD 23
Jan 01	Supplemental FOSL, Group 6 Facilities	Lowas, Albert F, Jr AFBCA/DM McClellan	4334 CD 26

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
22 Jan 01	CDTSC Memo Concerning Comments on Human Health Risk Assessment Procedures, OU-A, OU-C, OU-E, OU-F, OU-G, OU-H	Renzi, Barbara California Department of Toxic Substances Control	4119 CD 24
31 Jan 01	CDTSC Letter to Base Concerning Comments on Human Health Risk Assessment, OU-A, OU-B, OU-C, OU-D, OU-E, OU-F, OU-G, OU-H	Malinowski, Mark California Department of Toxic Substances Control	4118 CD 24
23 Apr 01	Base Letter to Distribution Concerning Comments on Startup Memorandum, SVE, IC-25	Mook, Philip H, Jr AFBCA/DM McClellan	4177 CD 24
28 Jun 01	CDTSC Letter to Base Concerning Approval of RA Memorandum and Final SVE, EE/CA, PRL S-033, IC-25, IC-41, IC-42, IC-43	Malinowski, Mark California Department of Toxic Substances Control	4212 CD 24
27 Dec 01	EPA Letter to Base Concerning Comments on SVE Removal Action, Quarterly Vadose Zone Monitoring Report and Closure, Jul-Sep 01	Healy, Joseph B, Jr EPA Region IX	4362 CD 26
03 Jan 02	CDTSC Memo Concerning Comments on Quarterly Vadose Zone Monitoring Report and Closure, Jul - Sep 01	Malinowski, Mark California Department of Toxic Substances Control	4372 CD 26
11 Jan 02	CDTSC Letter to Base Concerning Comments on Vadose Zone Monitoring Report, Jul - Sep 01	Depies, Kevin California Department of Toxic Substances Control	4373 CD 26
22 Jan 02	CRWQCB Letter to Base Concerning Comments on Vadose Zone Monitoring Report and Closure, Jul- Sep 01	Taylor, James D California Regional Water Quality Control Board	4374 CD 26
Feb 02	Removal Action, Vadose Zone Quarterly Monitoring Report, SVE	URSG-OHM	4379 CD 26

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
01 Apr 02	EPA Letter to Base Concerning Comments on Removal Action Report, SVE, Vadose Zone Monitoring Report and Closure, Fourth Quarter 01	Healy, Joseph B, Jr EPA Region IX	4419 CD 26
03 Apr 02	CDTSC Memo Concerning Comments on Vadose Zone Monitoring Report and Closure, Fourth Quarter 01	Malinowski, Mark California Department of Toxic Substances Control	4435 CD 26
19 Apr 02	CDTSC Letter to Base Concerning Comments on Vadose Zone Report and Closure, Fourth Quarter 01	Depies, Kevin California Department of Toxic Substances Control	4434 CD 26
May 02	Removal Action, SVE Quarterly Monitoring Report and Closure Considerations, First Quarter 02	URS, Corp.	4447 CD 26
08 Nov 02	Administrative Record File Index	LABAT-ANDERSON INCORPORATED	01 CD 1

Administrative Record for SA 041

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
Aug 90	RI/FS, Stage 4, Planning Network Report	Radian, Corp.	1567 CD 10
10 Aug 94	CRWQCB Letter to Base Concerning Comments on Basewide Ecological Risk Assessment Draft Scoping Report, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	2415 CD 8
16 Sep 94	CRWQCB Letter to Base Concerning Draft Final Scoping Report for Basewide Ecological Risk Assessment, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	2443 CD 15
23 Sep 94	CDTSC Letter to Base Concerning Comments on Scoping Report for Basewide Ecological Risk Assessment, OU-A	Harris, John California Department of Toxic Substances Control	2446 CD 15
Oct 94	Basewide Ecological Risk Assessment Final Scoping Report, OU-A	Jacobs Engineering Group, Inc.	2472 CD 21
01 Nov 94	CRWQCB Letter to Base Concerning Comments on Draft Site Characterization Summaries, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	2479 CD 13
02 Dec 94	CDTSC Letter to Base Concerning Comments on Final Ecological Risk Assessment Scoping Report, OU-A	Harris, John California Department of Toxic Substances Control	2504 CD 14
May 95	RI, Interim Basewide Draft Report, Site Characterization Summary and FSP, Part 2A, Vol I of VI, OU-A	Jacobs Engineering Group, Inc.	2634 CD 14
May 95	RI, Interim Basewide Draft Report, Site Characterization Summary and FSP, Part 2A, Vol II of VI, OU-A	Jacobs Engineering Group, Inc.	2635 CD 14
May 95	RI, Interim Basewide Draft Report, Site Characterization Summary and FSP, Part 2A, Vol III of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2636 CD 15

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
May 95	RI, Interim Basewide Draft Report, Site Characterization Summary and FSP, Part 2A, Vol IV of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2637 CD 15
May 95	RI, Interim Basewide Draft Report, Site Characterization Summary and FSP, Part 2A, Vol V of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2638 CD 15
May 95	RI, Interim Basewide Draft Report, Site Characterization Summary and FSP, Part 2A, Vol VI of VI, Appendices B-D, OU-A	Jacobs Engineering Group, Inc.	2639 CD 15
30 Jun 95	EPA Letter to Base Concerning Comments on Interim RI Basewide Draft Report Part 2A, OU-A	Healy, Joseph B, Jr EPA Region IX	2674 CD 15
03 Jul 95	CRWQCB Letter to Base Concerning Comments on RI Draft FSP, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	2680 CD 15
05 Jul 95	CDTSC Letter to Base Concerning Comments on Draft Site Characterization Summaries and FSP, OU-A	Malinowski, Mark California Department of Toxic Substances Control	2682 CD 15
27 Sep 95	CRWQCB Letter to Base Concerning Comments on Draft Final RI FSP, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	2758 CD 15
27 Sep 95	CDTSC Letter to Base Concerning Comments on Draft Final Site Characterization Summaries and FSP, OU-A	Malinowski, Mark California Department of Toxic Substances Control	2759 CD 15
12 Oct 95	EPA Letter to Base Concerning Comments on Draft Final Site Characterization Summary and FSP, OU-A	Healy, Joseph B, Jr EPA Region IX	2775 CD 16

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
Nov 95	RI, Interim Basewide Final Report, Site Characterization Summary and FSP, Part 2A, Vol I of VI, OU-A	Jacobs Engineering Group, Inc.	2795 CD 16
Nov 95	RI, Interim Basewide Final Report, Site Characterization Summary and FSP, Part 2A, Vol II of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2796 CD 16
Nov 95	RI, Interim Basewide Final Report, Site Characterization Summary and FSP, Part 2A, Vol III of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2797 CD 16
Nov 95	RI, Interim Basewide Final Report, Site Characterization Summary and FSP, Part 2A, Vol IV of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2798 CD 16
Nov 95	RI, Interim Basewide Final Report, Site Characterization Summary and FSP, Part 2A, Vol V of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2799 CD 16
Nov 95	RI, Interim Basewide Final Report, Site Characterization Summary and FSP, Part 2A, Vol VI of VI, Appendices B-D, OU-A	Jacobs Engineering Group, Inc.	2800 CD 16
16 Nov 95	Base Memo Concerning Final Site Characterization Summary and FSP Submittal, OU-A	Schmalz, Kirk L SM-ALC/EMR	2815 CD 16
13 Dec 95	Multiple Decision Documents	CH2M Hill	2843 CD 17
19 Dec 95	CRWQCB Letter to Base Concerning Comments on Final Basewide Ecological Risk Assessment Summary Scoping Report	MacDonald, Alexander M California Regional Water Quality Control Board	2859 CD 17
29 Dec 95	RI, Characterization Summary Report, OU-A, SS-202	Jacobs Engineering Group, Inc.	3027 CD 17

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
13 Feb 96	Base Letter to EPA Concerning Response to Comments on NFI Consensus Statement	Schmalz, Kirk L SM-ALC/EMR	3029 CD 17
14 Feb 96	CDTSC Letter to Base Concerning CDTSC Comments on Final Basewide EA Summary Scoping Report, OU-A, OU-B, OU-C, OU-D	Malinowski, Mark California Department of Toxic Substances Control	3032 CD 17
03 Oct 96	CRWQCB Letter to Base Concerning Phase II RI/FS, FSP Report, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	3182 CD 18
Nov 96	RI, Draft Interim Basewide Report, Revision 1	Radian, Corp.	3198 CD 18
03 Apr 97	CRWQCB Letter to Base Concerning Comments on RI, Draft Final Interim Basewide Report, Revision 1	MacDonald, Alexander M California Regional Water Quality Control Board	3319 CD 18
30 Apr 97	EPA Letter to Base Concerning Comments on Removal Action Work Plan, Basewide SVE	Chang, James EPA Region IX	3337 CD 18
07 May 97	Base Letter to Regulators Concerning Appropriate Modeling to Determine Potential Water Quality Impacts From Metals Contaminated Soil	Anderson, Elaine S SM-ALC/EMR	3339 CD 18
14 May 97	EPA Letter to Base Concerning Letter on Appropriate Modeling to Determine Potential Water Quality Impacts From Metals Contaminated Soil	Healy, Joseph B, Jr EPA Region IX	3342 CD 18
27 May 97	CRWQCB Letter to Base Concerning Comments on Appropriate Modeling to Determine Potential Water Quality Impacts From Metals Contaminated Soils	MacDonald, Alexander M California Regional Water Quality Control Board	3348 CD 18

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
28 May 97	CRWQCB Letter to Base Concerning Comments on Appropriate Modeling to Determine Potential Water Quality Impacts From Metals Contaminated Soils	MacDonald, Alexander M California Regional Water Quality Control Board	3349 CD 18
Jun 97	Final Ecological Risk Assessment Strategy Report	Radian, Corp.	3354 CD 19
Jun 97	RI, Final Interim Basewide Report, Part 1, Vol I of II, Revision 1	Radian, Corp.	3355 CD 19
Jun 97	RI, Final Interim Basewide Report, Part 1, Vol II of II, Appendices, Revision 1	Radian, Corp.	3356 CD 19
14 Jul 97	Base Memo Concerning Risk Assessment, OU-A, OU-C	Anderson, Elaine S SM-ALC/EMR	3387 CD 19
30 Jul 97	CRWQCB Letter to Base Concerning Comments on RI, Final Interim Basewide Report, Part 1, Revision 1	MacDonald, Alexander M California Regional Water Quality Control Board	3401 CD 19
03 Feb 98	EPA Letter to Base Transmitting Comments on Draft Basewide Removal Action Work Plan, SVE	Chang, James EPA Region IX	2794 CD 16
23 Feb 98	EPA Letter to Base Concerning RAR Living Review Comments on RI, Draft Interim Basewide Report, Part 1	Healy, Joseph B, Jr EPA Region IX	268 CD 2
26 Feb 98	EPA Letter to Base Concerning RAR Living Review Comments on RI, Draft Interim Basewide Report	Healy, Joseph B, Jr EPA Region IX	270 CD 2
03 Mar 98	EPA Letter to Base Transmitting RAR Living Review Comments on RI, Draft Interim Basewide Report, Part 1	Healy, Joseph B, Jr EPA Region IX	273 CD 2

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
Apr 98	Final Basewide Removal Action Work Plan, SVE	URS Greiner, Inc.	823 CD 4
08 Apr 98	CRWQCB Letter to Base Concerning Basewide Removal Action Work Plan, SVE	MacDonald, Alexander M California Regional Water Quality Control Board	832 CD 4
01 May 98	EPA Letter to Base Concerning RAR Living Comments on RI, Interim Basewide Report, Part 1	Healy, Joseph B, Jr EPA Region IX	850 CD 4
04 Jun 98	CDTSC Letter to Base Concerning Comments on Solicitation of ARARs, Non-VOC, FS	Adams, Randy S California Department of Toxic Substances Control	877 CD 3
29 Jun 98	EPA Letter to Base Concerning Comments on Draft Technical Memorandum, Non-VOC FS	Healy, Joseph B, Jr EPA Region IX	889 CD 3
08 Jul 98	CDTSC Letter to Base Concerning Comments on Evaluation of Draft Non-VOC, FS Technical Memorandum, Draft Final Status Survey Plan	Adams, Randy S California Department of Toxic Substances Control	1845 CD 7
14 Jul 98	CDTSC Memo Concerning Comments on Non-VOC FS Technical Memorandum	Renzi, Barbara California Department of Toxic Substances Control	1847 CD 7
17 Jul 98	CDTSC Letter to Base Concerning Summary of State and Local ARARs, Non-VOC, FS	Adams, Randy S California Department of Toxic Substances Control	939 CD 4
20 Jul 98	CRWQCB Letter to CDTSC Concerning Solicitation of ARARs, Non-VOC, FS	MacDonald, Alexander M California Regional Water Quality Control Board	1839 CD 7

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
27 Aug 98	CRWQCB Letter to Base Concerning Comments on Draft Final RI Characterization Summaries, Part 2A	MacDonald, Alexander M California Regional Water Quality Control Board	2967 CD 17
18 Sep 98	CDTSC Letter to Base Concerning Comments on Draft Final RI Characterization Summaries, Part 2A	Adams, Randy S California Department of Toxic Substances Control	2960 CD 17
20 Nov 98	CRWQCB Letter to Base Concerning RI, Draft Final Interim Basewide Report, Characterization Summary, Part 2a	MacDonald, Alexander M California Regional Water Quality Control Board	976 CD 4
03 Jun 99	CRWQCB Letter to Base Concerning Non-VOC FS Draft EE/CA Staging Pile Technical Memorandum	MacDonald, Alexander M California Regional Water Quality Control Board	2902 CD 17
11 Jun 99	CRWQCB Letter to Base Concerning Comments on RI, Draft Interim Basewide Report, Part 1 General Framework, Revision 2	MacDonald, Alexander M California Regional Water Quality Control Board	952 CD 4
25 Jun 99	EPA Letter to Base Concerning Non-VOC, FS, EE/CA Staging Pile Technical	Hanusiak, Lisa EPA Region IX	3622 CD 21
22 Dec 99	CRWQCB Letter to Base Concerning FS, Surface Water Discharge Estimation Procedure, Non-VOC	MacDonald, Alexander M California Regional Water Quality Control Board	3735 CD 21
Aug 00	FS, Draft, Non-VOC and Landfill	CH2M Hill	3884 CD 23
06 Sep 00	CRWQCB Letter to Base Concerning Comments on Draft Supplemental EBS, Group 6	Taylor, James D California Regional Water Quality Control Board	3900 CD 22

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
19 Sep 00	CRWQCB Memo Concerning Beneficial Use, Protective Water Quality Limits, Petroleum-Based Fuels	Marshack, Jon B California Regional Water Quality Control Board	4248 CD 24
10 Oct 00	CDTSC Memo Concerning Comments on Draft FS, Non-VOC	Renzi, Barbara California Department of Toxic Substances Control	4112 CD 24
20 Nov 00	CRWQCB Letter to Base Concerning Comments on Draft Final Supplemental EBS, Group 6	Taylor, James D California Regional Water Quality Control Board	3961 CD 23
Dec 00	Final Supplemental Environmental Baseline Survey (EBS), Vol II of II, Appendices A-F, Group 6	URS Greiner Woodward Clyde, Inc.	3964 CD 23
Dec 00	Final Supplemental Environmental Baseline Survey (EBS), Vol I of II, Group 6	URS Greiner Woodward Clyde, Inc.	3963 CD 23
01 Dec 00	CRWQCB Letter to Base Concerning Comments on FS, Draft Non-VOC, Landfill	Taylor, James D California Regional Water Quality Control Board	3966 CD 23
11 Dec 00	CDTSC Memo Concerning Comments on Draft, Non-VOC, FS	Malinowski, Mark California Department of Toxic Substances Control	4111 CD 24
21 Dec 00	EPA Letter to Base Concerning Review Comments on FS, Draft Non-VOC	Healy, Joseph B, Jr EPA Region IX	3975 CD 23
Jan 01	Supplemental FOSL, Group 6 Facilities	Lowas, Albert F, Jr AFBCA/DM McClellan	4334 CD 26
19 Jan 01	CDTSC Letter to Base Concerning Comments on FS, Draft Non-VOC and Landfill	Malinowski, Mark California Department of Toxic Substances Control	4113 CD 24

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22 Jan 01	CDTSC Memo Concerning Comments on Human Health Risk Assessment Procedures, OU-A, OU-C, OU-E, OU-F, OU-G, OU-H	Renzi, Barbara California Department of Toxic Substances Control	4119 CD 24
31 Jan 01	CDTSC Letter to Base Concerning Comments on Human Health Risk Assessment, OU-A, OU-B, OU-C, OU-D, OU-E, OU-F, OU-G, OU-H	Malinowski, Mark California Department of Toxic Substances Control	4118 CD 24
08 Mar 02	EPA Letter to Base Concerning Comments on Draft Basewide, Non-VOC FS	Healy, Joseph B, Jr EPA Region IX	4398 CD 26
08 Nov 02	Administrative Record File Index	LABAT-ANDERSON INCORPORATED	01 CD 1

Administrative Record for SA 091

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
Aug 90	RI/FS, Stage 4, Planning Network Report	Radian, Corp.	1567 CD 10
28 Feb 92	FSP, Group 1, OU-A	Jacobs Engineering Group, Inc.	1880 CD 7
04 Mar 92	CRWQCB Letter to Base Concerning Comments on RI, SAP, FSP, Group 1	MacDonald, Alexander M California Regional Water Quality Control Board	1872 CD 7
22 Apr 92	CDTSC Letter to Base Concerning Comments on SAP, FSP, Group 1 and 3, OU-A	Wang, David California Department of Toxic Substances Control	2948 CD 17
01 Feb 93	EPA Letter to Base Concerning Review of Consensus Statement on Background Constituents in Subsurface Soils	Moore, Katherine EPA Region IX	2073 CD 8
17 Feb 93	Consensus Statement, Background Inorganic Constituents in Subsurface Soils	Radian Corp.	2084 CD 8
10 Aug 94	CRWQCB Letter to Base Concerning Comments on Basewide Ecological Risk Assessment Draft Scoping Report, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	2415 CD 8
Sep 94	PA/SI, Final Technical Summary Report	Radian Corp.	2427 CD 8
16 Sep 94	CRWQCB Letter to Base Concerning Draft Final Scoping Report for Basewide Ecological Risk Assessment, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	2443 CD 15
23 Sep 94	CDTSC Letter to Base Concerning Comments on Scoping Report for Basewide Ecological Risk Assessment, OU-A	Harris, John California Department of Toxic Substances Control	2446 CD 15

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
Oct 94	Basewide Ecological Risk Assessment Final Scoping Report, OU-A	Jacobs Engineering Group, Inc.	2472 CD 21
02 Dec 94	CDTSC Letter to Base Concerning Comments on Final Ecological Risk Assessment Scoping Report, OU-A	Harris, John California Department of Toxic Substances Control	2504 CD 14
03 Apr 95	CRWQCB Letter to Base Concerning Draft Site Characterization Summary for IC-43, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	2613 CD 14
May 95	RI, Interim Basewide Draft Report, Site Characterization Summary and FSP, Part 2A, Vol I of VI, OU-A	Jacobs Engineering Group, Inc.	2634 CD 14
May 95	RI, Interim Basewide Draft Report, Site Characterization Summary and FSP, Part 2A, Vol II of VI, OU-A	Jacobs Engineering Group, Inc.	2635 CD 14
May 95	RI, Interim Basewide Draft Report, Site Characterization Summary and FSP, Part 2A, Vol III of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2636 CD 15
May 95	RI, Interim Basewide Draft Report, Site Characterization Summary and FSP, Part 2A, Vol IV of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2637 CD 15
May 95	RI, Interim Basewide Draft Report, Site Characterization Summary and FSP, Part 2A, Vol V of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2638 CD 15
May 95	RI, Interim Basewide Draft Report, Site Characterization Summary and FSP, Part 2A, Vol VI of VI, Appendices B-D, OU-A	Jacobs Engineering Group, Inc.	2639 CD 15
30 Jun 95	EPA Letter to Base Concerning Comments on Interim RI Basewide Draft Report Part 2A, OU-A	Healy, Joseph B, Jr EPA Region IX	2674 CD 15

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
03 Jul 95	CRWQCB Letter to Base Concerning Comments on RI Draft FSP, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	2680 CD 15
05 Jul 95	CDTSC Letter to Base Concerning Comments on Draft Site Characterization Summaries and FSP, OU-A	Malinowski, Mark California Department of Toxic Substances Control	2682 CD 15
27 Sep 95	CRWQCB Letter to Base Concerning Comments on Draft Final RI FSP, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	2758 CD 15
27 Sep 95	CDTSC Letter to Base Concerning Comments on Draft Final Site Characterization Summaries and FSP, OU-A	Malinowski, Mark California Department of Toxic Substances Control	2759 CD 15
12 Oct 95	EPA Letter to Base Concerning Comments on Draft Final Site Characterization Summary and FSP, OU-A	Healy, Joseph B, Jr EPA Region IX	2775 CD 16
Nov 95	RI, Interim Basewide Final Report, Site Characterization Summary and FSP, Part 2A, Vol I of VI, OU-A	Jacobs Engineering Group, Inc.	2795 CD 16
Nov 95	RI, Interim Basewide Final Report, Site Characterization Summary and FSP, Part 2A, Vol II of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2796 CD 16
Nov 95	RI, Interim Basewide Final Report, Site Characterization Summary and FSP, Part 2A, Vol III of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2797 CD 16
Nov 95	RI, Interim Basewide Final Report, Site Characterization Summary and FSP, Part 2A, Vol IV of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2798 CD 16

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DOC. DATE	SUBJECT OR TITLE	AUTHOR or CORP. AUTHOR	FILE/CD NUMBER
Nov 95	RI, Interim Basewide Final Report, Site Characterization Summary and FSP, Part 2A, Vol V of VI, Appendix A, OU-A	Jacobs Engineering Group, Inc.	2799 CD 16
Nov 95	RI, Interim Basewide Final Report, Site Characterization Summary and FSP, Part 2A, Vol VI of VI, Appendices B-D, OU-A	Jacobs Engineering Group, Inc.	2800 CD 16
16 Nov 95	Base Memo Concerning Final Site Characterization Summary and FSP Submittal, OU-A	Schmalz, Kirk L SM-ALC/EMR	2815 CD 16
13 Dec 95	Multiple Decision Documents	CH2M Hill	2843 CD 17
19 Dec 95	CRWQCB Letter to Base Concerning Comments on Final Basewide Ecological Risk Assessment Summary Scoping Report	MacDonald, Alexander M California Regional Water Quality Control Board	2859 CD 17
13 Feb 96	Base Letter to EPA Concerning Response to Comments on NFI Consensus Statement	Schmalz, Kirk L SM-ALC/EMR	3029 CD 17
14 Feb 96	CDTSC Letter to Base Concerning CDTSC Comments on Final Basewide EA Summary Scoping Report, OU-A, OU-B, OU-C, OU-D	Malinowski, Mark California Department of Toxic Substances Control	3032 CD 17
03 Oct 96	CRWQCB Letter to Base Concerning Phase II RI/FS, FSP Report, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	3182 CD 18
Nov 96	RI, Draft Interim Basewide Report, Revision 1	Radian, Corp.	3198 CD 18
03 Apr 97	CRWQCB Letter to Base Concerning Comments on RI, Draft Final Interim Basewide Report, Revision 1	MacDonald, Alexander M California Regional Water Quality Control Board	3319 CD 18

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30 Apr 97	EPA Letter to Base Concerning Comments on Removal Action Work Plan, Basewide SVE	Chang, James EPA Region IX	3337 CD 18
Jun 97	Final Ecological Risk Assessment Strategy Report	Radian, Corp.	3354 CD 19
Jun 97	RI, Final Interim Basewide Report, Part 1, Vol I of II, Revision 1	Radian, Corp.	3355 CD 19
Jun 97	RI, Final Interim Basewide Report, Part 1, Vol II of II, Appendices, Revision 1	Radian, Corp.	3356 CD 19
14 Jul 97	Base Memo Concerning Risk Assessment, OU-A, OU-C	Anderson, Elaine S SM-ALC/EMR	3387 CD 19
30 Jul 97	CRWQCB Letter to Base Concerning Comments on RI, Final Interim Basewide Report, Part 1, Revision 1	MacDonald, Alexander M California Regional Water Quality Control Board	3401 CD 19
03 Feb 98	EPA Letter to Base Transmitting Comments on Draft Basewide Removal Action Work Plan, SVE	Chang, James EPA Region IX	2794 CD 16
23 Feb 98	EPA Letter to Base Concerning RAR Living Review Comments on RI, Draft Interim Basewide Report, Part 1	Healy, Joseph B, Jr EPA Region IX	268 CD 2
26 Feb 98	EPA Letter to Base Concerning RAR Living Review Comments on RI, Draft Interim Basewide Report	Healy, Joseph B, Jr EPA Region IX	270 CD 2
03 Mar 98	EPA Letter to Base Transmitting RAR Living Review Comments on RI, Draft Interim Basewide Report, Part 1	Healy, Joseph B, Jr EPA Region IX	273 CD 2

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Apr 98	Final Basewide Removal Action Work Plan, SVE	URS Greiner, Inc.	823 CD 4
08 Apr 98	CRWQCB Letter to Base Concerning Basewide Removal Action Work Plan, SVE	MacDonald, Alexander M California Regional Water Quality Control Board	832 CD 4
01 May 98	EPA Letter to Base Concerning RAR Living Comments on RI, Interim Basewide Report, Part 1	Healy, Joseph B, Jr EPA Region IX	850 CD 4
04 Jun 98	CDTSC Letter to Base Concerning Comments on Solicitation of ARARs, Non-VOC, FS	Adams, Randy S California Department of Toxic Substances Control	877 CD 3
29 Jun 98	EPA Letter to Base Concerning Comments on Draft Technical Memorandum, Non-VOC FS	Healy, Joseph B, Jr EPA Region IX	889 CD 3
08 Jul 98	CDTSC Letter to Base Concerning Comments on Evaluation of Draft Non-VOC, FS Technical Memorandum, Draft Final Status Survey Plan	Adams, Randy S California Department of Toxic Substances Control	1845 CD 7
14 Jul 98	CDTSC Memo Concerning Comments on Non-VOC FS Technical Memorandum	Renzi, Barbara California Department of Toxic Substances Control	1847 CD 7
17 Jul 98	CDTSC Letter to Base Concerning Summary of State and Local ARARs, Non-VOC, FS	Adams, Randy S California Department of Toxic Substances Control	939 CD 4
20 Jul 98	CRWQCB Letter to CDTSC Concerning Solicitation of ARARs, Non-VOC, FS	MacDonald, Alexander M California Regional Water Quality Control Board	1839 CD 7
10 Aug 98	EPA Letter to Base Concerning Review Comments on Draft Final Data Gap 2 FSP	Healy, Joseph B, Jr EPA Region IX	2954 CD 17

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14 Aug 98	CDTSC Letter to Base Concerning Comments on Draft Final Data Gap 2 FSP	Adams, Randy S California Department of Toxic Substances Control	2956 CD 17
25 Aug 98	CRWQCB Letter to Base Concerning Comments on Draft Basewide Data FSP 3	MacDonald, Alexander M California Regional Water Quality Control Board	1816 CD 7
27 Aug 98	CRWQCB Letter to Base Concerning Comments on Draft Final RI Characterization Summaries, Part 2A	MacDonald, Alexander M California Regional Water Quality Control Board	2967 CD 17
31 Aug 98	CRWQCB Letter to Base Concerning Comments on Final Data Gap 1 FSP and Summary Reports	MacDonald, Alexander M California Regional Water Quality Control Board	2966 CD 17
18 Sep 98	CDTSC Letter to Base Concerning Comments on Draft Final RI Characterization Summaries, Part 2A	Adams, Randy S California Department of Toxic Substances Control	2960 CD 17
29 Sep 98	CDTSC Letter to Base Concerning Comments on Draft Final FSP for Basewide SVE Well Installation	Adams, Randy S California Department of Toxic Substances Control	2957 CD 17
20 Nov 98	CRWQCB Letter to Base Concerning RI, Draft Final Interim Basewide Report, Characterization Summary, Part 2a	MacDonald, Alexander M California Regional Water Quality Control Board	976 CD 4
Dec 98	Final Basewide SVE Report, Well Installation FSP	URS Greiner Woodward Clyde, Inc.	2872 CD 17
08 Feb 99	EPA Letter to Base Transmitting Review Comments on Draft Final Data Gap FSP 3	Healy, Joseph B, Jr EPA Region IX	1983 CD 8

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01 Mar 99	CDTSC Letter to Base Transmitting Comments on Draft Final Basewide Data Gap 3, FSP, Jan 99	Adams, Randy S California Department of Toxic Substances Control	1957 CD 8
12 Apr 99	EPA Letter to Base Concerning Review Comments on Draft Data Gap 4 FSP	Healy, Joseph B, Jr EPA Region IX	2886 CD 17
10 May 99	CRWQCB Letter to Base Concerning Comments on Draft EE/CA for SVE at IC-43, OU-A	MacDonald, Alexander M California Regional Water Quality Control Board	2943 CD 17
27 May 99	EPA Letter to Base Transmitting Review Comments on Draft Final EE/CA, SVE Revision 0, IC-43	Hanusiak, Lisa EPA Region IX	1953 CD 8
28 May 99	Data Gap Field Sampling and SVE Well Installation, Data Quality Assessment Report	URS Greiner Woodward Clyde, Inc.	2878 CD 17
03 Jun 99	CRWQCB Letter to Base Concerning Non-VOC FS Draft EE/CA Staging Pile Technical Memorandum	MacDonald, Alexander M California Regional Water Quality Control Board	2902 CD 17
09 Jun 99	CDTSC Letter to Base Concerning Review of Draft EE/CA for SVE at IC-25 and IC-43, OU-A	Adams, Randy S California Department of Toxic Substances Control	2905 CD 17
11 Jun 99	CRWQCB Letter to Base Concerning Comments on RI, Draft Interim Basewide Report, Part 1 General Framework, Revision 2	MacDonald, Alexander M California Regional Water Quality Control Board	952 CD 4
25 Jun 99	EPA Letter to Base Concerning Non-VOC, FS, EE/CA Staging Pile Technical	Hanusiak, Lisa EPA Region IX	3622 CD 21
14 Sep 99	CRWQCB Letter to Base Concerning No Further Comments on Final Draft EE/CA, SVE, IC-43	MacDonald, Alexander M California Regional Water Quality Control Board	3667 CD 21

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16 Sep 99	EPA Letter to Base Concerning Comments on Final Draft EE/CA, SVE, IC-43	Hanusiak, Lisa EPA Region IX	3669 CD 21
21 Sep 99	CDTSC Letter to Base Concerning No Further Comments on Final Draft EE/CA, SVE System	Adams, Randy S California Department of Toxic Substances Control	3672 CD 21
Oct 99	Final EE/CA, SVE Report, IC-43	URS Greiner Woodward Clyde, Inc.	3682 CD 21
28 Oct 99	CRWQCB Letter to Base Concerning No Further Comments on Final EE/CA, SVE Report, IC-43	MacDonald, Alexander M California Regional Water Quality Control Board	3708 CD 21
Dec 99	Final Supplemental Environmental Baseline Survey (EBS), Facilities and Associated Properties, Group 1	Radian, Corp.	3724 CD 21
22 Dec 99	CRWQCB Letter to Base Concerning FS, Surface Water Discharge Estimation Procedure, Non-VOC	MacDonald, Alexander M California Regional Water Quality Control Board	3735 CD 21
07 Jan 00	Supplemental FOSL, Group 1 Facilities	Lowas, Albert F, Jr SM-ALC/EM	4324 CD 26
13 Mar 00	Final Action Memorandum, SVE, IC-43	SM-ALC/EMR	3786 CD 22
Aug 00	FS, Draft, Non-VOC and Landfill	CH2M Hill	3884 CD 23
Sep 00	Final Report, Infrastructure Assessment	Parsons Engineering Science, Inc.	4058 CD 24

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08 Sep 00	CRWQCB Letter to Base Concerning No Comments on Draft O&M Manual, SVE, IC-41, IC-42, IC-43	Taylor, James D California Regional Water Quality Control Board	3902 CD 22
19 Sep 00	CRWQCB Memo Concerning Beneficial Use, Protective Water Quality Limits, Petroleum-Based Fuels	Marshack, Jon B California Regional Water Quality Control Board	4248 CD 24
10 Oct 00	CDTSC Memo Concerning Comments on Draft FS, Non-VOC	Renzi, Barbara California Department of Toxic Substances Control	4112 CD 24
Nov 00	RA, Report, SVE, IC-41, IC-42, IC-43	Radian, Corp.	3951 CD 23
01 Dec 00	CRWQCB Letter to Base Concerning Comments on FS, Draft Non-VOC, Landfill	Taylor, James D California Regional Water Quality Control Board	3966 CD 23
11 Dec 00	CDTSC Memo Concerning Comments on Draft, Non-VOC, FS	Malinowski, Mark California Department of Toxic Substances Control	4111 CD 24
21 Dec 00	EPA Letter to Base Concerning Review Comments on FS, Draft Non-VOC	Healy, Joseph B, Jr EPA Region IX	3975 CD 23
19 Jan 01	CDTSC Letter to Base Concerning Comments on FS, Draft Non-VOC and Landfill	Malinowski, Mark California Department of Toxic Substances Control	4113 CD 24
22 Jan 01	CDTSC Memo Concerning Comments on Human Health Risk Assessment Procedures, OU-A, OU-C, OU-E, OU-F, OU-G, OU-H	Renzi, Barbara California Department of Toxic Substances Control	4119 CD 24

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31 Jan 01	CDTSC Letter to Base Concerning Comments on Human Health Risk Assessment, OU-A, OU-B, OU-C, OU-D, OU-E, OU-F, OU-G, OU-H	Malinowski, Mark California Department of Toxic Substances Control	4118 CD 24
28 Jun 01	CDTSC Letter to Base Concerning Approval of RA Memorandum and Final SVE, EE/CA, PRL S-033, IC-25, IC-41, IC-42, IC-43	Malinowski, Mark California Department of Toxic Substances Control	4212 CD 24
27 Dec 01	EPA Letter to Base Concerning Comments on SVE Removal Action, Quarterly Vadose Zone Monitoring Report and Closure, Jul-Sep 01	Healy, Joseph B, Jr EPA Region IX	4362 CD 26
03 Jan 02	CDTSC Memo Concerning Comments on Quarterly Vadose Zone Monitoring Report and Closure, Jul - Sep 01	Malinowski, Mark California Department of Toxic Substances Control	4372 CD 26
11 Jan 02	CDTSC Letter to Base Concerning Comments on Vadose Zone Monitoring Report, Jul - Sep 01	Depies, Kevin California Department of Toxic Substances Control	4373 CD 26
22 Jan 02	CRWQCB Letter to Base Concerning Comments on Vadose Zone Monitoring Report and Closure, Jul- Sep 01	Taylor, James D California Regional Water Quality Control Board	4374 CD 26
Feb 02	Removal Action, Vadose Zone Quarterly Monitoring Report, SVE	URSG-OHM	4379 CD 26
08 Mar 02	EPA Letter to Base Concerning Comments on Draft Basewide, Non-VOC FS	Healy, Joseph B, Jr EPA Region IX	4398 CD 26
01 Apr 02	EPA Letter to Base Concerning Comments on Removal Action Report, SVE, Vadose Zone Monitoring Report and Closure, Fourth Quarter 01	Healy, Joseph B, Jr EPA Region IX	4419 CD 26

Appendix A
Human Health Risk Assessments for PRL S-014, PRL S-033, SA 035, and SA 091

SECTION A1

PRL S-014

The baseline human health risk assessment estimates what risks the site poses if no action were taken. It provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial actions. This section of the ROD summarizes the results of the baseline risk assessment for PRL S-014.

A1.1 Identification of Chemicals of Concern

Contaminants of concern (COC) for PRL S-014 include volatile organic compounds (VOCs), metals, and PCB-1260. Tables A1-1a through A1-1d present the air, soil gas, groundwater, and soil data summaries, respectively, for the COCs (site-specific tables are located at the end of each section). No groundwater samples were collected within a 200-foot radius of this site. However, groundwater samples collected at PS14HP13, located cross-gradient and outside of the groundwater exposure area, were used to estimate groundwater exposure point concentrations (EPCs) for PRL S-014.

Tables A1-1a through A1-1d include the range of COC concentrations, as well as the frequency of detection (i.e., the number of times the chemical was detected in the samples collected at the site), the EPCs, and how the EPCs were derived for each of the media and exposure areas of PRL S-014. In general, the lower value of the maximum concentration or the upper 95th percent confidence limit on the arithmetic mean was used as the EPC for COCs detected in more than one sample.

A1.2 Exposure Assessment

A conceptual model was developed that describes the potential exposure pathways associated with soil and groundwater at PRL S-014 (see Figure 2-3 in Section 2.4 of the ROD). Although PRL S-014 will likely be used for commercial/industrial or mixed-use purposes in the future; several exposure scenarios were evaluated in the human health risk assessment to provide information for future risk-management decisions.

The following exposure scenarios were quantitatively evaluated in the human health risk assessment:

- Exposure of hypothetical future residents (adults and children) to soil (0 to 2 feet bgs) and groundwater
- Exposure of hypothetical future residents (adults and children) to soil (0 to 10 feet bgs) and groundwater
- Exposure of outdoor workers to soil (0 to 2 feet bgs)

- Exposure of indoor workers to VOCs in indoor air
- Exposure of construction workers to soil (0 to 15 feet bgs)

The exposure routes that were considered in the risk assessment for residents and workers potentially exposed to soil include incidental soil ingestion, inhalation of VOCs (indoor air for residents and ambient air for outdoor workers and construction workers)and resuspended particulates, and dermal contact with soil. For the residential scenarios, the ingestion of homegrown produce was also included. For groundwater, the ingestion, inhalation of VOCs, and dermal contact exposure routes were evaluated. For the indoor worker, potential risk associated with inhalation of VOCs in indoor air was evaluated.

Based on the history and use of PRL S-014, the site was divided into two exposure areas for the human health risk assessment: the area north of Building 22 in the vicinity of the former transformer (PRL S-014 North), and the area south of Building 22 where activities related to the motor pool facility were conducted (PRL S-014 South). For PRL S-014 North, only PCB data are available. PRL S-014 North was not sampled for other analytes because the only known potential source of contamination in that area is an electrical transformer.

A1.3 Toxicity Assessment

The toxicity data that were used in the human health risk assessment are summarized on Tables A1-2 and A1-3. Health effects are divided into two categories: cancer and noncancer effects.

Table A1-2 presents the slope factors used to estimate potential excess lifetime cancer risks associated with exposure to COPCs in soil, air, and groundwater at PRL S-014. As shown on Table A1-2, the oral slope factor was used to estimate potential risks associated with dermal exposure. These values were obtained from the EPA Integrated Risk Information System (IRIS) database, California Environmental Protection Agency (Cal-EPA), and the National Center for Environmental Assessment (NCEA).

Table A1-3 presents the reference doses (RfDs) used to evaluate the potential for noncancer health effects. Reference doses are not available for PCB-1260, so reference doses for PCB-1254 were used as surrogates to evaluate noncancer health effects of PCB-1260. The toxicity information for polychlorinated biphenyls indicates that exposure is associated with a number of toxic effects, including cancer. For purposes of evaluating non-cancer effects, the RfD is based on effects on the immune system. The oral RfDs were used to estimate potential health effects associated with dermal exposure. In addition, inhalation reference concentrations are not available for some of the COPCs, so the oral RfDs were used to evaluate potential health effects from the inhalation exposure route. The reference doses shown on Table A1-3 were obtained from the IRIS database, Health Effects Assessment Summary Tables (HEAST), and NCEA. Since the human health risk assessment was conducted, a more conservative reference exposure level (REL) has been made available by California EPA for arsenic. Potential impacts to the human health risk assessment from using the new REL are discussed in Section A1.5.

A1.4 Risk Characterization

The California EPA and EPA toxicity values described above were used in the human health risk assessment along with the exposure information to estimate the potential risks from contacting COPCs in soil, air, and groundwater. For carcinogens, risks are generally expressed as the incremental probability of an individual's developing cancer over a lifetime as a results of exposure to the carcinogen. Excess lifetime cancer risk is calculated from the following equation:

Risk = CDI x SF

Where:

Risk = a unitless probability (e.g., 1×10^{-6}) of an individual's developing cancer

CDI = chronic daily intake averaged over 70 years (mg/kg-day)

SF = slope factor, expressed as $(mg/kg\text{-}day)^{-1}$

These risks are probabilities that usually are expressed in scientific notation (e.g., 1×10^{-6}). An excess lifetime cancer risk of 1×10^{-6} indicates that an individual experiencing the reasonable maximum exposure estimate has a 1 in a million chance of developing cancer as a results of site-related exposure. This is referred to as an "excess lifetime cancer risk" because it would be in addition to the risks of cancer individuals face from other causes such as smoking or exposure to too much sun. EPA's generally acceptable risk range for site-related exposures is 10^{-4} to 10^{-6}.

The potential for noncarcinogenic effects is evaluated by comparing an exposure level over a specified time period (e.g., life-time) with an RfD derived for a similar exposure period. An RfD represents a level that an individual may be exposed to that is not expected to cause any deleterious effect. The ratio of the receptor average daily exposure to the route-specific reference dose is called a hazard quotient (HQ). An HQ less than one indicates that the receptor's dose of a single contaminant is less than the RfD, and that toxic noncarcinogenic effects from that chemical are unlikely. The hazard index is generated by adding the HQs over the exposure routes. A hazard index less than one indicates that, based on the sum of all HQs from different exposure routes, toxic noncarcinogenic effects are unlikely. A hazard index greater than one indicates that site-related exposure may present a risk to human health.

The HQ is calculated as follows:

Non-cancer HQ = CDI/RfD

Where:

CDI = chronic daily intake (milligrams per kilogram per day [mg/kg-day])

RfD = reference dose (mg/kg-day)

CDI and RfD are expressed in the same units and represent the same exposure period (i.e., chronic, subchronic, or short-term.)

Table A1-4 presents the potential cancer risk estimates for the two exposure areas and the various exposure scenarios and exposure routes at PRL S-014. These risk estimates are based on reasonable maximum exposure and were developed taking into account various conservative assumptions about the frequency and duration of receptors exposure to soil and the toxicity of the COPCs.

Both residential and occupational exposure scenarios were evaluated for PRL S-014 (South) and PRL S-014 (North). The risk results for these scenarios are summarized below and presented in the risk summary tables at the end of this section.

The potential cancer risks for PRL S-014 (South) are as follows:

- Future adult resident (0 to 2 feet bgs depth interval): 8×10^{-5}
- Future adult resident (0 to 10 feet bgs depth interval): 1×10^{-4}
- Future adult resident (0 to 2 feet bgs depth interval excluding produce pathway): 2×10^{-5}
- Future adult resident (0 to 10 feet bgs depth interval excluding produce pathway): 1×10^{-5}
- Future adult resident (0 to 2 feet bgs depth interval) and groundwater: 8×10^{-5}
- Future adult resident (0 to 10 feet bgs depth interval) and groundwater: 1×10^{-4}
- Future adult resident (groundwater only): 2×10^{-6}

- Outdoor occupational worker: 3×10^{-6}
- Indoor occupational worker: 1×10^{-8}
- Future construction worker: 2×10^{-6}

The main contributor to the cumulative risks for the residential scenarios is the ingestion of arsenic in homegrown produce. Potential risks associated with VOCs and PCBs in soil were all below 1×10^{-6}. Potential risks associated with VOCs in groundwater were 2×10^{-6}.

The potential cancer risks in soil for PRL S-014 (North) are as follows:

- Future adult resident (0 to 2 feet bgs depth interval): 5×10^{-5}
- Future adult resident (0 to 10 feet bgs depth interval): 2×10^{-5}
- Future adult resident (0 to 2 feet bgs depth interval excluding produce pathway): 1×10^{-5}
- Future adult resident (0 to 10 feet bgs depth interval excluding produce pathway): 1×10^{-5}

- Outdoor occupational worker: 5×10^{-6}
- Future construction worker: 4×10^{-7}

The sole known contaminant in the north is Aroclor 1260, and the main pathway contributing to the risk estimates for the residential scenarios is the homegrown produce pathway. The risk estimate for the future adult resident for soil (0-10 feet bgs depth interval) and groundwater is at the upper end of the US EPA risk management range. All other estimated risks are within or below the range.

Table A1-5 presents the noncancer hazard indexes for the two exposure areas and the various exposure scenarios and exposure routes at PRL S-014. The potential noncancer risks for PRL S-014 (South) are as follows:

- Future adult resident (0 to 2 feet bgs depth interval): <1
- Future adult resident (0 to 10 feet bgs depth interval): <1

- Future adult resident (0 to 2 feet bgs depth interval excluding the produce pathway): <1
- Future adult resident (0 to 10 feet bgs depth interval excluding the produce pathway): <1
- Future adult resident (0 to 2 feet bgs depth interval) and groundwater: <1
- Future adult resident (0 to 10 feet bgs depth interval) and groundwater: <1
- Future adult resident (groundwater only): 0.05

- Future child resident (0 to 2 feet bgs depth interval): 1
- Future child resident (0 to 10 feet bgs depth interval): 2
- Future child resident (0 to 2 feet bgs depth interval excluding the produce pathway): <1
- Future child resident (0 to 10 feet bgs depth interval excluding the produce pathway): <1
- Future child resident (0 to 2 feet bgs depth interval) and groundwater: 1
- Future child resident (0 to 10 feet bgs depth interval) and groundwater: 2
- Future child resident (groundwater only): 0.1

- Indoor occupational worker: <1
- Outdoor occupational worker: <1
- Future construction worker: <1

The potential for adverse noncancer health affects for the adult resident and worker scenarios is unlikely. However, the main contributor to the hazard index for the child residential scenario is the hazard quotient for arsenic for the homegrown produce pathway.

The potential noncancer risks for PRL S-014 (North) are as follows:

- Future adult resident (0 to 2 feet bgs depth interval): 2
- Future adult resident (0 to 10 feet bgs depth interval): <1
- Future adult resident (0 to 2 feet bgs depth interval excluding the produce pathway): <1
- Future adult resident (0 to 10 feet bgs depth interval excluding the produce pathway): <1

- Future child resident (0 to 2 feet bgs depth interval): 8
- Future child resident (0 to 10 feet bgs depth interval): 3
- Future child resident (0 to 2 feet bgs depth interval excluding the produce pathway): 3
- Future child resident (0 to 10 feet bgs depth interval excluding the produce pathway): 1

- Outdoor occupational worker: <1
- Future construction worker: <1

There is a potential for adverse noncancer health effects from exposure to soil for the adult resident (0 to 2 feet bgs depth interval) and the child resident scenarios. The main pathway contributing to the hazard indexes for these residential scenarios is the homegrown produce pathway.

For PRL S-014 (South), blood-lead levels were estimated using soil lead concentrations and Lead-spread 7; estimated blood-lead levels were below the target level of 10 µg/dL in 99 percent (0.01 risk) of potentially exposed adult and child residents, outdoor workers, and construction workers.

Based on the risk assessment, the potential cancer risk from groundwater exposure for future adult residents is 1.6×10^{-6}. The main contributor to the potential cancer risk is TCE. For groundwater, the noncancer hazard index for the future adult resident is 0.05 and the

hazard index for the future child resident is 0.1. The main contributor to the hazard indices is TCE.

A1.5 Uncertainties

There are uncertainties associated with the risk estimates for PRL S-014. The main uncertainties are as follows:

- Current re-use plans for this site are indefinite, but do not include residential or other "sensitive" use scenarios (day-cares, schools, hospitals, etc.). Hence, the use of the residential scenario for the site should be considered hypothetical at this time.
- The partition coefficient used to estimate potential risks from the homegrown produce pathway for Aroclor-1260 is based on modeled data and not empirical data of plant uptake of PCBs. For arsenic, a range of empirical values of the partition coefficients is available spanning approximately an order of magnitude. Since the homegrown produce pathway is the major contributor to the overall risk estimates for the site, the uncertainties from this pathway are reflected in the overall risk estimates which may be overestimated or underestimated because of the uncertainties with the plant partition coefficients.
- Toxicity criteria for some of the VOCs have changed since the human health risk assessment was conducted. VOC risk estimates may increase or decrease by more than an order of magnitude when the VOC risk assessment is updated with the most current toxicity criteria. At this time, the current toxicity values for the following chemicals for PRL S-014 are different than the toxicity values that were used in the risk assessment:
  - 1,1-Dichloroethene (1,1-DCE): this chemical was evaluated as a carcinogen in the risk assessment. Since the risk assessment was conducted, USEPA has withdrawn the slope factors for 1,1-DCE. Cumulative risks for VOCs may be overestimated in the risk assessment because 1,1-DCE was included as a carcinogen. In addition, the oral and inhalation reference doses (RfDs) for 1,1-DCE have changed and are now less stringent than the values used in the risk assessment, so Hazard Quotients (HQs) for 1,1-DCE may be overestimated in the risk assessment.
  - Tetrachloroethene (PCE): The current oral slope factor from California EPA for PCE is approximately an order of magnitude more stringent than the value used in the risk assessment. Consequently, potential risks for PCE may be underestimated in the risk assessment. There is a current reference exposure level (REL) from California EPA for PCE that is more stringent by approximately an order of magnitude, so the HQs for PCE may be underestimated in the risk assessment.
  - Trichloroethene (TCE): There was a slight change to the California EPA oral slope factor for TCE (changed from 0.015 to 0.013 $[mg/kg\text{-}day]^{-1}$) since the risk assessment was performed but this change should not significantly impact the potential cancer risk estimates. The current USEPA National Center for Environmental Assessment (NCEA) oral slope factor for TCE is more stringent by more than an order of magnitude than the value used in the risk assessment. For the inhalation slope factor, NCEA currently has a more stringent value than the value used in the risk

assessment. However, the current California EPA inhalation slope factor for TCE is less stringent than the value used in the risk assessment. The current oral RfD from NCEA for TCE is more than an order of magnitude of more stringent than the value used in the risk assessment. The current inhalation RfD for TCE from NCEA and the inhalation RfD derived from the current REL from California EPA are both less stringent than the inhalation RfD used in the risk assessment. Consequently, there is uncertainty associated with the risk results for TCE due to various toxicity factors currently available, and potential risks and HQs associated with TCE may be underestimated or overestimated.

- Acetone: The current oral RfD is less stringent by a factor of 9 than the value used in the risk assessment. Since the inhalation RfD is route-extrapolated value from the oral RfD, the new route extrapolated inhalation RfD is also less stringent than the route-extrapolated value used in the risk assessment. Consequently, the HQs for acetone may be overestimated.
- Benzene: The current oral RfD for benzene is less stringent than the value used in the risk assessment but the change should not significantly affect the HQs. The inhalation RfDs based on the current USEPA reference concentration and the California EPA REL are less stringent than the values used in the risk assessment. Consequently, HQs for benzene may be overestimated.
- Chloroform: The current NCEA inhalation RfD is more stringent by more than an order of magnitude than the route-extrapolated inhalation RfD used in the risk assessment. Therefore, the HQs for chloroform may be underestimated.
- Toluene: The inhalation RfD based on the current California EPA REL is more stringent than the value used in the risk assessment but the change should not significantly affect the HQs.
- 1,1,1-Trichloroethane: The current NCEA oral and inhalation RfDs are less stringent than the values used in the risk assessment. Therefore, the HQs for this chemical may be overestimated.
- Xylenes: The current USEPA oral and inhalation RfDs are more stringent by at least an order of magnitude than the values used in the risk assessment. In addition, the inhalation RfD based on the current California EPA REL is more stringent by an order of magnitude than the value used in the risk assessment. Therefore, HQs for xylenes may be underestimated.

- The hazard associated with inhalation exposure for arsenic was calculated using the USEPA oral RfD of 3×10^{-4} mg/kg-day and route extrapolation. An updated California EPA reference exposure level (REL) is now available for arsenic. This exposure level is preferable because it is route-specific.. However, since the inhalation route is a minor contributor to the overall hazard estimate for arsenic, use of the updated California EPA value would not significantly change the results of the human health risk assessment.
- Only PCB data are available for PRL S-014 North and therefore, cumulative risks may be underestimated. However, since the potential source of contamination for this area is an

electrical transformer, it was assumed that the PCB data are adequate to characterize the extent of contamination related to site activities.

- An uncertainty exists with the soil beneath the former hazardous waste storage area due to the lack of soils samples. This uncertainty may result in an underestimate of risk.
- Arsenic was detected at concentrations that appear greater than the "combined" background concentration at selected locations. These detections were in samples analyzed by EPA Method 6010, which are considered suspect. We do not have confirmation samples using EPA Method 7060 at the same location(s), or in the immediate vicinity of the samples with elevated arsenic detection, so an uncertainty regarding arsenic as a contaminant is introduced. The maximum reported concentrations of arsenic by the preferred analytical method, Method SW7060, are less than the maximum reported concentrations by Method SW6010. In addition, the sporadic elevated concentrations are not indicative of a contaminant source. Therefore, the risk associated with arsenic at this site may be representative of background.

Table A1-1a
Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations
PRL S-014

Scenario Timeframe:	Future							
Medium	Soil Gas							
Exposure Medium	Soil Gas							
Exposure Point	Chemical of Concern	Concentration Detected (ppbv) Min	Concentration Detected (ppbv) Max	Frequency of Detection	95th UCL Concentration (ppbv)	Statistical Measure[a]	Exposure Point Concentration[b] (ppbv)	Exposure Point Concentration in Soil[c] (mg/kg)
PRL S-014 - Soil Gas	Acetone	1.9E+01	1.9E+01	1/6	2.3E+03	Max Detect	1.9E+01	1.1E-02
	Benzene	4.5E+00	4.5E+00	1/6	2.6E+03	Max Detect	4.5E+00	1.6E-05
	Carbon tetrachloride	1.8E+02	3.0E+02	2/6	2.5E+02	95UCL Lognormal	2.5E+02	1.1E-03
	Chloroform	1.8E+01	1.8E+01	1/6	2.7E+02	Max Detect	1.8E+01	1.3E-04
	Dichlorodifluoromethane	1.7E+02	1.7E+02	1/6	1.4E+02	95UCL Lognormal	1.4E+02	9.8E-05
	1,1-Dichloroethane	1.1E+02	1.1E+02	1/6	1.1E+02	95UCL Lognormal	1.1E+02	4.6E-04
	1,1-Dichloroethene	6.8E+01	6.8E+01	1/6	1.1E+02	Max Detect	6.8E+01	9.7E-05
	cis -1,2-Dichloroethene	1.3E+00	1.3E+00	1/6	7.0E+04	Max Detect	1.3E+00	6.7E-06
	Ethylbenzene	1.6E+00	1.6E+00	1/6	3.7E+04	Max Detect	1.6E+00	7.0E-06
	Propene	2.5E+01	2.5E+01	1/1	--[d]	Max Detect	2.5E+01	7.6E-06
	Styrene	2.1E+00	2.1E+00	1/1	--[d]	Max Detect	2.1E+00	3.3E-05
	Tetrachloroethene	7.2E+00	7.2E+00	1/6	1.0E+03	Max Detect	7.2E+00	2.7E-05
	Toluene	5.9E+00	5.9E+00	1/6	1.5E+03	Max Detect	5.9E+00	2.5E-05
	1,1,1-Trichloroethane	2.8E+00	2.8E+00	1/6	8.0E+03	Max Detect	2.8E+00	7.2E-06
	Trichloroethene	1.3E+02	1.3E+02	1/6	1.2E+02	95UCL Lognormal	1.2E+02	4.2E-04
	1,1,2-Trichloro-1,2,2-trifluoroethane	1.1E+01	1.1E+01	1/6	5.1E+02	Max Detect	1.1E+01	1.3E-05
	Trichlorofluoromethane	1.5E+02	4.9E+02	2/6	4.1E+02	95UCL Lognormal	4.1E+02	4.6E-04
	1,2,4-Trimethylbenzene	3.9E+00	3.9E+00	1/1	--[d]	Max Detect	3.9E+00	7.7E-05
	1,3,5-Trimethylbenzene	2.9E+00	2.9E+00	1/1	--[d]	Max Detect	2.9E+00	5.2E-05
	Xylenes	6.9E+00	6.9E+00	1/6	1.1E+03	Max Detect	6.9E+00	1.2E-04

[a] The statistical measure indicates the basis for the exposure point concentration.

[b] The exposure point concentration is the lower value of the maximum concentration or the 95th UCL concentration.

[c] Exposure point concentrations for these VOCs in soil are modeled from measured shallow soil gas concentrations.

[d] Due to the limited data set, a statistical analysis could not be conducted to determine the 95th UCL concentration.

95th UCL = 95 percent upper confidence limit on the mean.

Table A1-1b
Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations
PRL S-014

Scenario Timeframe:	**Future**
Medium	**Air**
Exposure Medium	**Air**

			Residential Indoor Air		Construction Worker Air Exposure		Occupational Worker Air Exposure		
Exposure Point	**Chemical of Concern**	**Exposure Point Concentration in Soil[a] (mg/kg)**	**30-Year Flux Rate (g/m^2-s)**	**Exposure Point Concentration Residential Indoor Air[b] (mg/m^3)**	**1-Year Flux Rate (g/m^2-s)**	**Exposure Point Concentration Construction Worker Outdoor Air[b] (mg/m^3)**	**25-Year Flux Rate (g/m^2-s)**	**Exposure Point Concentration Occupational Indoor Air[b] (mg/m^3)**	**Exposure Point Concentration Occupational Outdoor Air[b] (mg/m^3)**
PRL S-014 - VOCs in Air	Acetone	1.1E-02	2.33E-12	1.4E-06	8.04E-22	3.1E-18	2.01E-12	2.4E-07	7.8E-09
	Benzene	1.6E-05	1.10E-13	6.4E-08	6.56E-13	2.5E-09	1.29E-13	1.5E-08	5.0E-10
	Carbon tetrachloride	1.1E-03	7.55E-12	4.4E-06	6.30E-11	2.4E-07	8.92E-12	1.1E-06	3.5E-08
	Chloroform	1.3E-04	8.48E-13	4.9E-07	4.03E-12	1.6E-08	9.84E-13	1.2E-07	3.8E-09
	Dichlorodifluoromethane	9.8E-05	6.53E-13	3.8E-07	1.40E-11	5.4E-08	8.04E-13	9.7E-08	3.1E-09
	1,1-Dichloroethane	4.6E-04	3.04E-12	1.8E-06	1.64E-11	6.3E-08	3.55E-12	4.3E-07	1.4E-08
	1,1-Dichloroethene	9.7E-05	6.93E-13	4.0E-07	8.82E-12	3.4E-08	8.31E-13	1.0E-07	3.2E-09
	cis-1,2-Dichloroethene	6.7E-06	4.37E-14	2.5E-08	2.12E-13	8.2E-10	5.08E-14	6.1E-09	2.0E-10
	Ethylbenzene	7.0E-06	4.65E-14	2.7E-08	2.70E-13	1.1E-09	5.43E-14	6.5E-09	2.1E-10
	Propene	7.6E-06	4.93E-14	2.9E-08	1.16E-12	4.5E-09	6.10E-14	7.3E-09	2.4E-10
	Styrene	3.3E-05	1.59E-13	9.2E-08	2.30E-13	8.9E-10	1.78E-13	2.1E-08	6.8E-10
	Tetrachloroethene	2.7E-05	1.93E-13	1.1E-07	1.71E-12	6.6E-09	2.28E-13	2.7E-08	8.8E-10
	Toluene	2.5E-05	1.65E-13	9.5E-08	9.03E-13	3.5E-09	1.92E-13	2.3E-08	7.4E-10
	1,1,1-Trichloroethane	7.2E-06	5.14E-14	3.0E-08	5.50E-13	2.1E-09	6.13E-14	7.4E-09	2.4E-10
	Trichloroethene	4.2E-04	2.96E-12	1.7E-06	2.48E-11	9.6E-08	3.50E-12	4.2E-07	1.4E-08
	1,1,2-Trichloro-1,2,2-trifluoroethane	1.3E-05	9.31E-14	5.4E-08	1.07E-12	4.1E-09	1.11E-13	1.3E-08	4.3E-10
	Trichlorofluoromethane	4.6E-04	3.17E-12	1.8E-06	5.98E-11	2.3E-07	3.87E-12	4.6E-07	1.5E-08
	1,2,4-Trimethylbenzene	7.7E-05	3.48E-13	2.0E-07	3.93E-13	1.5E-09	3.86E-13	4.6E-08	1.5E-09
	1,3,5-Trimethylbenzene	5.2E-05	2.44E-13	1.4E-07	3.14E-13	1.2E-09	2.73E-13	3.3E-08	1.1E-09
	Xylenes	1.2E-04	2.91E-13	1.7E-07	3.64E-14	1.4E-10	3.06E-13	3.7E-08	1.2E-09

[a] Exposure point concentrations for these VOCs in soil are modeled from measured shallow soil gas concentrations.

[b] Emissions from soil and resulting air concentrations were estimated from models using the exposure point concentration modeled in soil.

Table A1-1c
Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations
PRL S-014

Scenario Timeframe:	**Future**						
Medium	**Groundwater**						
Exposure Medium	**Groundwater**						
Exposure Point	**Chemical of Concern**	**Concentration Detected (μg/L)**		**Frequency of Detection**	**95th UCL Concentration (μg/L)**	**Statistical Measure[b]**	**Exposure Point Concentration[c] (μg/L)**
		Min	**Max**				
PRL S-014 - Groundwater On-site Direct Contact	Trichloroethene	1.6E+00	1.6E+00	1/2	--	Max Detect	1.6E+00
	Xylenes	2.1E+00	2.1E+00	1/2	--	Max Detect	2.1E+00

[a] Due to the limited data set, a statistical analysis could not be conducted to determine the 95th UCL concentration.

[b] The statistical measure indicates the basis for the exposure point concentration.

[c] The exposure point concentration is the lower value of the maximum concentration or the 95th UCL concentration.

95th UCL = 95 percent upper confidence limit on the mean.

Table A1-1d
Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations
PRL S-014

Scenario Timeframe:	**Future**						
Medium	**Soil**						
Exposure Medium	**Soil**						
Exposure Point	**Chemical of Concern**	**Concentration Detected (mg/kg) Min**	**Max**	**Frequency of Detection**	**95th UCL Concentration (mg/kg)**	**Statistical Measure[a]**	**Exposure Point Concentration[b] (mg/kg)**
PRL S-014 North - Soil On-site Direct Contact (0-2 ft bgs)	PCB-1260 (arochlor 1260)	8.0E-03	5.6E+00	12/15	3.4E+00	95UCL Lognormal	3.4E+00
PRL S-014 North - Soil On-site Direct Contact (0-10 ft bgs)	PCB-1260 (arochlor 1260)	8.0E-03	5.6E+00	14/19	1.3E+00	95UCL Lognormal	1.3E+00
PRL S-014 South - Soil On-site Direct Contact (0-2 ft bgs)	Arsenic	1.5E+00	8.0E+00	6/6	6.1E+00	95UCL Normal	6.1E+00
	Beryllium	4.0E-01	6.4E-01	4/4	6.5E-01	Max Detect	6.4E-01
	Copper	1.8E+01	2.8E+01	4/4	2.7E+01	95UCL Normal	2.7E+01
	Lead	5.7E+00	3.2E+01	4/4	4.4E+02	Max Detect	3.2E+01
	Vanadium	4.5E+01	5.8E+01	4/4	5.9E+01	Max Detect	5.8E+01
	Zinc	3.4E+01	6.2E+01	4/4	5.9E+01	95UCL Normal	5.9E+01
	PCB-1260 (arochlor 1260)	6.2E-02	6.2E-02	1/7	3.7E-02	95UCL Lognormal	3.7E-02
PRL S-014 South - Soil On-site Direct Contact (0-10 ft bgs)	Arsenic	9.7E-01	1.0E+01	13/13	8.4E+00	95UCL Lognormal	8.4E+00
	Beryllium	1.8E-01	8.2E-01	10/10	5.9E-01	95UCL Normal	5.9E-01
	Copper	1.5E+01	3.3E+01	10/10	2.5E+01	95UCL Normal	2.5E+01
	Lead	3.0E+00	3.2E+01	11/11	1.2E+01	95UCL Lognormal	1.2E+01
	Vanadium	3.9E+01	1.0E+02	10/10	7.5E+01	95UCL Lognormal	7.5E+01
	Zinc	3.4E+01	6.5E+01	10/10	5.1E+01	95UCL Normal	5.1E+01
	PCB-1260 (arochlor 1260)	6.2E-02	6.2E-02	1/7	3.7E-02	95UCL Lognormal	3.7E-02
PRL S-014 South - Soil On-site Direct Contact (0-15 ft bgs)	Arsenic	9.7E-01	1.0E+01	14/14	8.6E+00	95UCL Lognormal	8.6E+00
	Beryllium	1.8E-01	8.2E-01	10/10	5.9E-01	95UCL Normal	5.9E-01
	Copper	1.5E+01	3.3E+01	10/10	2.5E+01	95UCL Normal	2.5E+01
	Lead	3.0E+00	3.2E+01	11/11	1.2E+01	95UCL Lognormal	1.2E+01
	Vanadium	3.9E+01	1.0E+02	10/10	7.5E+01	95UCL Lognormal	7.5E+01
	Zinc	3.4E+01	6.5E+01	10/10	5.1E+01	95UCL Normal	5.1E+01
	PCB-1260 (arochlor 1260)	6.2E-02	6.2E-02	1/7	3.7E-02	95UCL Lognormal	3.7E-02

[a] The statistical measure indicates the basis for the exposure point concentration.

[b] The exposure point concentration is the lower value of the maximum concentration or the 95th UCL concentration.

95th UCL = 95 percent upper confidence limit on the mean.

Table A1-2
Cancer Toxicity Data Summary
PRL S-014

Pathway: Ingestion, Dermal						
Chemical of Concern	Oral Cancer Slope Factor	Dermal Cancer Slope Factor	Slope Factor Units	Weight of Evidence[a]	Source	Date
Arsenic	1.5E+00	1.5E+00	$(mg/kg\text{-}day)^{-1}$	A	IRIS	2002
Beryllium			$(mg/kg\text{-}day)^{-1}$	B2		
Lead			$(mg/kg\text{-}day)^{-1}$	B2		
Benzene	1.0E-01	1.0E-01	$(mg/kg\text{-}day)^{-1}$	A	Cal-EPA	2002
Carbon Tetrachloride	1.5E-01	1.5E-01	$(mg/kg\text{-}day)^{-1}$	B2	Cal-EPA	2002
Chloroform	3.1E-02	3.1E-02	$(mg/kg\text{-}day)^{-1}$	B2	Cal-EPA	2002
1,1-Dichloroethane	5.7E-03	5.7E-03	$(mg/kg\text{-}day)^{-1}$	C	Cal-EPA	2002
1,1-Dichloroethene	6.0E-01	6.0E-01	$(mg/kg\text{-}day)^{-1}$	C	IRIS	2002
Tetrachloroethene	5.2E-02	5.2E-02	$(mg/kg\text{-}day)^{-1}$		NCEA	2002
Trichloroethene	1.5E-02	1.5E-02	$(mg/kg\text{-}day)^{-1}$	B2/C	NCEA	2002
PCB-1260 (arochlor 1260)	2.0E+00	2.0E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2003
Pathway: Inhalation						
Chemical of Concern	Inhalation Cancer Slope Factor	Slope Factor Units	Weight of Evidence[a]	Source	Date	
Arsenic	1.5E+01	$(mg/kg\text{-}day)^{-1}$	A	IRIS	2002	
Beryllium	8.4E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2002	
Lead		$(mg/kg\text{-}day)^{-1}$	B2			
Benzene	1.0E-01	$(mg/kg\text{-}day)^{-1}$	A	Cal-EPA	2002	
Carbon Tetrachloride	1.5E-01	$(mg/kg\text{-}day)^{-1}$	B2	Cal-EPA	2002	
Chloroform	8.0E-02	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2002	
1,1-Dichloroethane	5.7E-03	$(mg/kg\text{-}day)^{-1}$	C	Cal-EPA	2002	
1,1-Dichloroethene	1.8E-01	$(mg/kg\text{-}day)^{-1}$	C	IRIS	2002	
Tetrachloroethene	2.1E-02	$(mg/kg\text{-}day)^{-1}$		Cal-EPA	2002	
Trichloroethene	1.0E-02	$(mg/kg\text{-}day)^{-1}$	B2/C	NCEA	2002	
PCB-1260 (arochlor 1260)	2.0E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2003	

[a]Weight of Evidence Classification

A - human carcinogen
B1 and B2 - probable human carcinogen
C - possible human carcinogen
D - not classifiable as a human carcinogen
E - evidence of noncarcinogenicity for humans
Reference = USEPA 1989. Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A). EPA/540/1-89/002. December.

Table A1-3
Non-Cancer Toxicity Data Summary
PRL S-014

Pathway: Ingestion, Dermal									
Chemical of Concern	Chronic/ subchronic	Oral RfD	Oral RfD Units	Dermal RfD	Dermal RfD Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ
Arsenic	Chronic	3.0E-04	mg/kg-day	3.0E-04	mg/kg-day	Vascular	3	IRIS	2002
Beryllium	Chronic	2.0E-03	mg/kg-day	2.0E-03	mg/kg-day	Small intestine; Lungs	300	IRIS	2002
Copper	Chronic	3.7E-02	mg/kg-day	3.7E-02	mg/kg-day	Gastro-intestinal system		HEAST	1997
Lead	Chronic		mg/kg-day		mg/kg-day				
Vanadium	Chronic	7.0E-03	mg/kg-day	7.0E-03	mg/kg-day	Liver and kidney	100	HEAST	1997
Zinc	Chronic	3.0E-01	mg/kg-day	3.0E-01	mg/kg-day	Blood	3	IRIS	2002
Acetone	Chronic	1.0E-01	mg/kg-day	1.0E-01	mg/kg-day	Kidney	1000	IRIS	2002
Benzene	Chronic	3.0E-03	mg/kg-day	3.0E-03	mg/kg-day	Blood	3000	NCEA	2002
Carbon Tetrachloride	Chronic	7.0E-04	mg/kg-day	7.0E-04	mg/kg-day	Liver	1000	IRIS	2002
Chloroform	Chronic	1.0E-02	mg/kg-day	1.0E-02	mg/kg-day	Liver	1000	IRIS	2002
Dichlorodifluoromethane	Chronic	2.0E-01	mg/kg-day	2.0E-01	mg/kg-day	Liver	100	IRIS	2002
1,1-Dichloroethane	Chronic	1.0E-01	mg/kg-day	1.0E-01	mg/kg-day	Kidney	1000	HEAST	1997
1,1-Dichloroethene	Chronic	9.0E-03	mg/kg-day	9.0E-03	mg/kg-day	Liver	1000	IRIS	2002
cis -1,2-Dichloroethene	Chronic	1.0E-02	mg/kg-day	1.0E-02	mg/kg-day	Blood	3000	HEAST	1997
Ethylbenzene	Chronic	1.0E-01	mg/kg-day	1.0E-01	mg/kg-day	Liver and kidney	1000	IRIS	2002
Propene	Chronic		mg/kg-day		mg/kg-day				
Styrene	Chronic	2.0E-01	mg/kg-day	2.0E-01	mg/kg-day	Blood and liver	1000	IRIS	2002
Tetrachloroethene	Chronic	1.0E-02	mg/kg-day	1.0E-02	mg/kg-day	Liver	1000	IRIS	2002
Toluene	Chronic	2.0E-01	mg/kg-day	2.0E-01	mg/kg-day	Liver and kidney	1000	IRIS	2002
1,1,1-Trichloroethane	Chronic	3.5E-02	mg/kg-day	3.5E-02	mg/kg-day			NCEA	2002
Trichloroethene	Chronic	6.0E-03	mg/kg-day	6.0E-03	mg/kg-day			NCEA	2002
1,1,2-Trichloro-1,2,2-trifluoroethane	Chronic	3.0E+01	mg/kg-day	3.0E+01	mg/kg-day	Brain	10	IRIS	2002
Trichlorofluoromethane	Chronic	3.0E-01	mg/kg-day	3.0E-01	mg/kg-day	Cellular	1000	IRIS	2002
1,2,4-Trimethylbenzene	Chronic	5.0E-02	mg/kg-day	5.0E-02	mg/kg-day	Lungs		NCEA	2002
1,3,5-Trimethylbenzene	Chronic	5.0E-02	mg/kg-day	5.0E-02	mg/kg-day	Lungs		NCEA	2002
Xylenes	Chronic	2.0E+00	mg/kg-day	2.0E+00	mg/kg-day	Decreased body weight	1000	IRIS	2002
PCB-1260 (arochlor 1260)	Chronic	2.0E-05	mg/kg-day	2.0E-05	mg/kg-day			SURROGATE	
Pathway: Inhalation									
Chemical of Concern	Chronic/ subchronic	Inhalation RfD	Oral RfD Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ		
Arsenic	Chronic	3.0E-04	mg/kg-day	Vascular	3	ROUTE	2002		
Beryllium	Chronic	5.7E-06	mg/kg-day	Small intestine; Lungs	10	IRIS	2002		
Copper	Chronic	3.7E-02	mg/kg-day	Gastro-intestinal system		ROUTE	2002		
Lead	Chronic		mg/kg-day						
Vanadium	Chronic	7.0E-03	mg/kg-day	Liver and kidney	100	ROUTE	2002		
Zinc	Chronic	3.0E-01	mg/kg-day	Blood	3	ROUTE	2002		
Acetone	Chronic	1.0E-01	mg/kg-day	Kidney	1000	ROUTE	2002		
Benzene	Chronic	1.7E-03	mg/kg-day	Blood	1000	NCEA	2002		
Carbon Tetrachloride	Chronic	5.7E-04	mg/kg-day	Liver		NCEA	2002		
Chloroform	Chronic	1.0E-02	mg/kg-day	Liver	1000	ROUTE	2002		
Dichlorodifluoromethane	Chronic	5.7E-02	mg/kg-day	Liver		HEAST	1997		
1,1-Dichloroethane	Chronic	1.4E-01	mg/kg-day	Kidney	1000	HEAST	1997		
1,1-Dichloroethene	Chronic	9.0E-03	mg/kg-day	Liver		ROUTE	2002		
cis -1,2-Dichloroethene	Chronic	1.0E-02	mg/kg-day	Blood		ROUTE	2002		
Ethylbenzene	Chronic	2.9E-01	mg/kg-day	Liver and kidney	300	IRIS	2002		
Propene	Chronic		mg/kg-day						
Styrene	Chronic	2.9E-01	mg/kg-day	Nervous system	30	IRIS	2002		
Tetrachloroethene	Chronic	1.1E-01	mg/kg-day	Liver	300	NCEA	2002		
Toluene	Chronic	1.1E-01	mg/kg-day	Liver and kidney	300	IRIS	2002		
1,1,1-Trichloroethane	Chronic	2.9E-01	mg/kg-day			NCEA	2002		
Trichloroethene	Chronic	6.0E-03	mg/kg-day			ROUTE	2002		
1,1,2-Trichloro-1,2,2-trifluoroethane	Chronic	8.6E+00	mg/kg-day	Brain		HEAST	1997		
Trichlorofluoromethane	Chronic	2.0E-01	mg/kg-day	Cellular		HEAST	1997		
1,2,4-Trimethylbenzene	Chronic	1.7E-03	mg/kg-day	Lungs		NCEA	2002		
1,3,5-Trimethylbenzene	Chronic	1.7E-03	mg/kg-day	Lungs		NCEA	2002		
Xylenes	Chronic	2.0E+00	mg/kg-day	Decreased body weight	1000	ROUTE	2002		
PCB-1260 (arochlor 1260)	Chronic	2.0E-05	mg/kg-day			SURROGATE			

Notes:
Toxicity values used were accurate as of the date of report submittal and are not necessarily the most current values.
Blank cells indicate information is not available or not applicable.

Cal-EPA = California Environmental Protection Agency
IRIS = Integrated Risk Information System
HEAST = Health Effects Assessment Summary Tables
mg/kg-day = milligrams per kilogram per day
NCEA = National Center for Environmental Assessment
RfD = reference dose
ROUTE = route-to-route extrapolated value (e.g., oral RfD used for inhalation RfD)
SURROGATE = RfDs for aroclor-1254 used for aroclor-1260 (IRIS 2003)

Table A1-4
Risk Characterization Summary - Carcinogens
PRL S-014

Scenario Timeframe: **Future**
Receptor Population: **Resident**
Receptor Age: **Adult**

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Carcinogenic Risk				
						Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	PRL S-014 North - Soil On-site Direct Contact (0-2 ft bgs)	PCB-1260 (arochlor 1260)	3.4E+00	mg/kg	1.0E-05	6.0E-11	5.0E-06	4.0E-05	5.0E-05
			TOTAL			**1.0E-05**	**6.0E-11**	**5.0E-06**	**4.0E-05**	**5.E-05**
		PRL S-014 North - Soil On-site Direct Contact (0-10 ft bgs)	PCB-1260 (arochlor 1260)	1.3E+00	mg/kg	4.0E-06	2.0E-11	2.0E-06	1.0E-05	2.0E-05
			TOTAL			**4.0E-06**	**2.0E-11**	**2.0E-06**	**1.0E-05**	**2.E-05**
		PRL S-014 South - Soil On-site Direct Contact (0-2 ft bgs)	Arsenic	6.1E+00	mg/kg	1.4E-05	1.5E-08	1.4E-06	6.5E-05	8.0E-05
			Beryllium	6.4E-01	mg/kg	--	8.9E-10	--	--	8.9E-10
			Lead	3.2E+01	mg/kg	--	--	--	--	--
			Benzene	1.6E-05	mg/kg	2.6E-12	9.5E-10	8.3E-13	--	9.5E-10
			Carbon tetrachloride	1.1E-03	mg/kg	2.5E-10	9.8E-08	8.2E-11	--	9.8E-08
			Chloroform	1.3E-04	mg/kg	6.4E-12	5.8E-09	2.1E-12	--	5.8E-09
			1,1-Dichloroethane	4.6E-04	mg/kg	4.1E-12	1.5E-09	1.3E-12	--	1.5E-09
			1,1-Dichloroethene	9.7E-05	mg/kg	9.1E-11	1.1E-08	2.9E-11	--	1.1E-08
			Tetrachloroethene	2.7E-05	mg/kg	2.2E-12	3.5E-10	7.2E-13	--	3.5E-10
			Trichloroethene	4.2E-04	mg/kg	9.9E-12	2.6E-09	3.2E-12	--	2.6E-09
			PCB-1260 (arochlor 1260)	3.7E-02	mg/kg	1.2E-07	6.8E-13	6.0E-08	4.0E-07	6.0E-07
			TOTAL			**1.4E-05**	**1.4E-07**	**1.5E-06**	**6.5E-05**	**8.E-05**
		PRL S-014 South - Soil On-site Direct Contact (0-10 ft bgs)	Arsenic	8.4E+00	mg/kg	2.0E-05	2.1E-08	1.9E-06	9.0E-05	1.1E-04
			Beryllium	5.9E-01	mg/kg	--	8.2E-10	--	--	8.2E-10
			Lead	1.2E+01	mg/kg	--	--	--	--	--
			Benzene	1.6E-05	mg/kg	2.6E-12	9.5E-10	8.3E-13	--	9.5E-10
			Carbon tetrachloride	1.1E-03	mg/kg	2.5E-10	9.8E-08	8.2E-11	--	9.8E-08
			Chloroform	1.3E-04	mg/kg	6.4E-12	5.8E-09	2.1E-12	--	5.8E-09
			1,1-Dichloroethane	4.6E-04	mg/kg	4.1E-12	1.5E-09	1.3E-12	--	1.5E-09
			1,1-Dichloroethene	9.7E-05	mg/kg	9.1E-11	1.1E-08	2.9E-11	--	1.1E-08
			Tetrachloroethene	2.7E-05	mg/kg	2.2E-12	3.5E-10	7.2E-13	--	3.5E-10
			Trichloroethene	4.2E-04	mg/kg	9.9E-12	2.6E-09	3.2E-12	--	2.6E-09
			PCB-1260 (arochlor 1260)	3.7E-02	mg/kg	1.0E-07	6.8E-13	6.0E-08	4.0E-07	6.0E-07
			TOTAL			**2.0E-05**	**1.4E-07**	**2.0E-06**	**9.0E-05**	**1.E-04**
Groundwater	Groundwater	PRL S-014 South - Groundwater On-site Direct Contact	Arsenic	--	--	--	--	--	--	--
			Beryllium	--	--	--	--	--	--	--
			Lead	--	--	--	--	--	--	--
			Benzene	--	--	--	--	--	--	--
			Carbon tetrachloride	--	--	--	--	--	--	--
			Chloroform	--	--	--	--	--	--	--
			1,1-Dichloroethane	--	--	--	--	--	--	--
			1,1-Dichloroethene	--	--	--	--	--	--	--
			Tetrachloroethene	--	--	--	--	--	--	--
			Trichloroethene	1.6E+00	µg/L	3.6E-07	1.2E-06	6.0E-08	--	1.6E-06
			PCB-1260 (arochlor 1260)	--	--	--	--	--	--	--
			TOTAL			**3.6E-07**	**1.2E-06**	**6.0E-08**	--	**2.E-06**

PRL S-014 South TOTAL (soil [0-2 ft bgs] + groundwater) = **8.E-05**
PRL S-014 South TOTAL (soil [0-10 ft bgs] + groundwater) = **1.E-04**

Scenario Timeframe: **Future**
Receptor Population: **Outdoor Occupational**
Receptor Age: **Adult**

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Carcinogenic Risk				
						Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	PRL S-014 North - Soil On-site Direct Contact (0-2 ft bgs)	PCB-1260 (arochlor 1260)	3.4E+00	mg/kg	1.0E-06	3.0E-11	4.0E-06	--	5.0E-06
			TOTAL			**1.0E-06**	**3.0E-11**	**4.0E-06**	--	**5.E-06**
		PRL S-014 South - Soil On-site Direct Contact (0-2 ft bgs)	Arsenic	6.1E+00	mg/kg	1.6E-06	7.2E-09	1.1E-06	--	2.7E-06
			Beryllium	6.4E-01	mg/kg	--	4.2E-10		--	4.2E-10
			Lead	3.2E+01	mg/kg	--	--	--	--	--
			Benzene	1.6E-05	mg/kg	2.9E-13	3.5E-12	6.5E-13	--	4.4E-12
			Carbon tetrachloride	1.1E-03	mg/kg	2.8E-11	3.6E-10	6.4E-11	--	4.5E-10
			Chloroform	1.3E-04	mg/kg	7.1E-13	2.1E-11	1.6E-12	--	2.3E-11
			1,1-Dichloroethane	4.6E-04	mg/kg	4.6E-13	5.5E-12	1.0E-12	--	7.0E-12
			1,1-Dichloroethene	9.7E-05	mg/kg	1.0E-11	4.0E-11	2.3E-11	--	7.3E-11
			Tetrachloroethene	2.7E-05	mg/kg	2.5E-13	1.3E-12	5.7E-13	--	2.1E-12
			Trichloroethene	4.2E-04	mg/kg	1.1E-12	9.5E-12	2.5E-12	--	1.3E-11
			PCB-1260 (arochlor 1260)	3.7E-02	mg/kg	1.0E-08	3.0E-13	4.0E-08	--	6.0E-08
			TOTAL			**1.6E-06**	**8.1E-09**	**1.1E-06**	--	**3.E-06**

Scenario Timeframe: **Future**
Receptor Population: **Indoor Occupational**
Receptor Age: **Adult**

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Carcinogenic Risk				
						Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	PRL S-014 North - Soil On-site Direct Contact (0-2 ft bgs)	PCB-1260 (arochlor 1260)	3.4E+00	mg/kg	--	--	--	--	--
			TOTAL			--	--	--	--	--
		PRL S-014 South - Soil On-site Direct Contact (0-2 ft bgs)	Benzene	1.6E-05	mg/kg	--	1.1E-10	--	--	1.1E-10
			Carbon tetrachloride	1.1E-03	mg/kg	--	1.1E-08	--	--	1.1E-08
			Chloroform	1.3E-04	mg/kg	--	6.6E-10	--	--	6.6E-10
			1,1-Dichloroethane	4.6E-04	mg/kg	--	1.7E-10	--	--	1.7E-10
			1,1-Dichloroethene	9.7E-05	mg/kg	--	1.3E-09	--	--	1.3E-09
			Tetrachloroethene	2.7E-05	mg/kg	--	4.0E-11	--	--	4.0E-11
			Trichloroethene	4.2E-04	mg/kg	--	2.9E-10	--	--	2.9E-10
			PCB-1260 (arochlor 1260)	3.7E-02	mg/kg	--	--	--	--	--
			TOTAL			--	**1.4E-08**	--	--	**1.E-08**

Scenario Timeframe: **Future**
Receptor Population: **Construction Worker**
Receptor Age: **Adult**

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Carcinogenic Risk				
						Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	PRL S-014 North - Soil On-site Direct Contact (0-15 ft bgs)	PCB-1260 (arochlor 1260)	3.4E+00	mg/kg	2.0E-07	4.0E-13	2.0E-07	--	4.0E-07
			TOTAL			**2.0E-07**	**4.0E-13**	**2.0E-07**	--	**4.E-07**
		PRL S-014 South - Soil On-site Direct Contact (0-15 ft bgs)	Arsenic	6.1E+00	mg/kg	8.7E-07	3.6E-07	2.5E-07	--	1.5E-06
			Beryllium	6.4E-01	mg/kg	--	1.4E-08	--	--	1.4E-08
			Lead	3.2E+01	mg/kg	--	--	--	--	--
			Benzene	1.6E-05	mg/kg	1.1E-13	7.1E-13	1.0E-13	--	9.2E-13
			Carbon tetrachloride	1.1E-03	mg/kg	1.1E-11	1.0E-10	1.0E-11	--	1.2E-10
			Chloroform	1.3E-04	mg/kg	2.7E-13	3.5E-12	2.6E-13	--	4.0E-12
			1,1-Dichloroethane	4.6E-04	mg/kg	1.8E-13	1.0E-12	1.7E-13	--	1.4E-12
			1,1-Dichloroethene	9.7E-05	mg/kg	3.9E-12	1.7E-11	3.7E-12	--	2.5E-11
			Tetrachloroethene	2.7E-05	mg/kg	9.6E-14	3.9E-13	9.1E-14	--	5.8E-13
			Trichloroethene	4.2E-04	mg/kg	4.3E-13	2.7E-12	4.0E-13	--	3.5E-12
			PCB-1260 (arochlor 1260)	3.7E-02	mg/kg	5.0E-09	1.0E-14	7.0E-09	--	1.0E-08
			TOTAL			**8.8E-07**	**3.7E-07**	**2.6E-07**	--	**2.E-06**

Table A1-5
Risk Characterization Summary - Non-Carcinogens
PRL S-014

Scenario Timeframe: **Future**
Receptor Population: **Resident**
Receptor Age: **Adult**

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Primary Target Organ	Non-Carcinogenic Hazard Quotient				
							Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	PRL S-014 North - Soil On-site Direct Contact (0-2 ft bgs)	PCB-1260 (arochlor 1260)	3.4E+00	mg/kg	--	2.0E-01	3.0E-06	1.0E-01	2.0E+00	2.0E+00
			TOTAL				**2.0E-01**	**3.0E-06**	**1.0E-01**	**2.0E+00**	**2.0E+00**
		PRL S-014 North - Soil On-site Direct Contact (0-10 ft bgs)	PCB-1260 (arochlor 1260)	1.3E+00	mg/kg	--	9.0E-02	1.0E-06	5.0E-02	6.0E-01	8.0E-01
			TOTAL				**9.0E-02**	**1.0E-06**	**5.0E-02**	**6.0E-01**	**8.0E-01**
		PRL S-014 South - Soil On-site Direct Contact (0-2 ft bgs)	Arsenic	6.1E+00	mg/kg	Vascular	2.8E-02	6.2E-06	3.3E-03	2.5E-01	2.8E-01
			Beryllium	6.4E-01	mg/kg	Small intestine; Lungs	4.4E-04	3.4E-05	1.7E-05	2.4E-03	2.9E-03
			Copper	2.7E+01	mg/kg	Gastro-intestinal system	1.0E-03	2.2E-07	4.0E-05	4.2E-03	5.2E-03
			Lead	3.2E+01	mg/kg	--	--	--	--	--	--
			Vanadium	5.8E+01	mg/kg	Liver and kidney	1.1E-02	2.5E-06	4.5E-04	4.7E-02	5.8E-02
			Zinc	5.9E+01	mg/kg	Blood	2.7E-04	6.0E-08	1.1E-05	1.1E-03	1.4E-03
			Acetone	1.1E-02	mg/kg	Kidney	1.5E-07	3.7E-06	6.1E-08	--	3.9E-06
			Benzene	1.6E-05	mg/kg	Blood	7.5E-06	1.0E-05	3.0E-09	--	1.8E-05
			Carbon Tetrachloride	1.1E-03	mg/kg	Liver	2.1E-06	2.1E-03	8.4E-07	--	2.1E-03
			Chloroform	1.3E-04	mg/kg	Liver	1.8E-08	1.3E-05	7.2E-09	--	1.3E-05
			Dichlorodifluoromethane	9.8E-05	mg/kg	Liver	6.7E-10	1.8E-06	2.7E-10	--	1.8E-06
			1,1-Dichloroethane	4.6E-04	mg/kg	Kidney	6.3E-09	3.4E-06	2.5E-09	--	3.4E-06
			1,1-Dichloroethene	9.7E-05	mg/kg	Liver	1.5E-08	1.2E-05	5.9E-09	--	1.2E-05
			cis-1,2-Dichloroethene	6.7E-06	mg/kg	Blood	9.2E-10	6.9E-07	3.7E-10	--	6.9E-07
			Ethylbenzene	7.0E-06	mg/kg	Liver and kidney	9.5E-11	2.6E-08	3.8E-11	--	2.6E-08
			Propene	7.6E-06	mg/kg	--	--	--	--	--	--
			Styrene	3.3E-05	mg/kg	Blood and liver	2.2E-10	8.8E-08	8.9E-11	--	8.8E-08
			Tetrachloroethene	2.7E-05	mg/kg	Liver	3.8E-09	3.1E-07	1.5E-09	--	3.2E-07
			Toluene	2.5E-05	mg/kg	Liver and kidney	1.7E-10	2.3E-07	6.8E-11	--	2.3E-07
			1,1,1-Trichloroethane	7.2E-06	mg/kg	--	2.8E-10	2.8E-08	1.1E-10	--	2.8E-08
			Trichloroethene	4.2E-04	mg/kg	--	9.6E-08	7.8E-05	3.8E-08	--	7.8E-05
			1,1,2-Trichloro-1,2,2-trifluoroethane	1.3E-05	mg/kg	Brain	5.9E-13	1.7E-09	2.4E-13	--	1.7E-09
			Trichlorofluoromethane	4.6E-04	mg/kg	Cellular	2.1E-09	2.5E-06	8.4E-10	--	2.5E-06
			1,2,4-Trimethylbenzene	7.7E-05	mg/kg	Lungs	2.1E-09	3.2E-05	8.4E-10	--	3.2E-05
			1,3,5-Trimethylbenzene	5.2E-05	mg/kg	Lungs	1.4E-09	2.3E-05	5.7E-10	--	2.3E-05
			Xylenes	1.2E-04	mg/kg	Decreased body weight	8.0E-11	2.3E-08	3.2E-11	--	2.3E-08
			PCB-1260 (arochlor 1260)	3.7E-02	mg/kg		3.0E-03	3.0E-08	2.0E-03	2.0E-02	2.0E-02
			TOTAL				**4.4E-02**	**2.3E-03**	**5.8E-03**	**3.2E-01**	**3.7E-01**
		PRL S-014 South - Soil On-site Direct Contact (0-10 ft bgs)	Arsenic	8.4E+00	mg/kg	Vascular	3.8E-02	8.6E-06	4.6E-03	3.5E-01	3.9E-01
			Beryllium	5.9E-01	mg/kg	Small intestine; Lungs	4.0E-04	3.1E-05	1.6E-05	2.2E-03	2.6E-03
			Copper	2.5E+01	mg/kg	Gastro-intestinal system	9.2E-04	2.1E-07	3.7E-05	3.8E-03	4.8E-03
			Lead	1.2E+01	mg/kg	--	--	--	--	--	--
			Vanadium	7.5E+01	mg/kg	Liver and kidney	1.5E-02	3.3E-06	5.8E-04	6.1E-02	7.7E-02
			Zinc	5.1E+01	mg/kg	Blood	2.3E-04	5.2E-08	9.3E-06	9.7E-04	1.2E-03
			Acetone	1.1E-02	mg/kg	Kidney	1.5E-07	3.7E-06	6.1E-08	--	3.9E-06
			Benzene	1.6E-05	mg/kg	Blood	7.5E-09	1.0E-05	3.0E-09	--	1.0E-05
			Carbon Tetrachloride	1.1E-03	mg/kg	Liver	2.1E-06	2.1E-03	8.4E-07	--	2.1E-03
			Chloroform	1.3E-04	mg/kg	Liver	1.8E-08	1.3E-05	7.2E-09	--	1.3E-05
			Dichlorodifluoromethane	9.8E-05	mg/kg	Liver	6.7E-10	1.8E-06	2.7E-10	--	1.8E-06
			1,1-Dichloroethane	4.6E-04	mg/kg	Kidney	6.3E-09	3.4E-06	2.5E-09	--	3.4E-06
			1,1-Dichloroethene	9.7E-05	mg/kg	Liver	1.5E-08	1.2E-05	5.9E-09	--	1.2E-05
			cis-1,2-Dichloroethene	6.7E-06	mg/kg	Blood	9.2E-10	6.9E-07	3.7E-10	--	6.9E-07
			Ethylbenzene	7.0E-06	mg/kg	Liver and kidney	9.5E-11	2.6E-08	3.8E-11	--	2.6E-08
			Propene	7.6E-06	mg/kg	--	--	--	--	--	--
			Styrene	3.3E-05	mg/kg	Blood and liver	2.2E-10	8.8E-08	8.9E-11	--	8.8E-08
			Tetrachloroethene	2.7E-05	mg/kg	Liver	3.8E-09	3.1E-07	1.5E-09	--	3.2E-07
			Toluene	2.5E-05	mg/kg	Liver and kidney	1.7E-10	2.3E-07	6.8E-11	--	2.3E-07
			1,1,1-Trichloroethane	7.2E-06	mg/kg	--	2.8E-10	2.8E-08	1.1E-10	--	2.8E-08
			Trichloroethene	4.2E-04	mg/kg	--	9.6E-08	7.8E-05	3.8E-08	--	7.8E-05
			1,1,2-Trichloro-1,2,2-trifluoroethane	1.3E-05	mg/kg	Brain	5.9E-13	1.7E-09	2.4E-13	--	1.7E-09
			Trichlorofluoromethane	4.6E-04	mg/kg	Cellular	2.1E-09	2.5E-06	8.4E-10	--	2.5E-06
			1,2,4-Trimethylbenzene	7.7E-05	mg/kg	Lungs	2.1E-09	3.2E-05	8.4E-10	--	3.2E-05
			1,3,5-Trimethylbenzene	5.2E-05	mg/kg	Lungs	1.4E-09	2.3E-05	5.7E-10	--	2.3E-05
			Xylenes	1.2E-04	mg/kg	Decreased body weight	8.0E-11	2.3E-08	3.2E-11	--	2.3E-08
			PCB-1260 (arochlor 1260)	3.7E-02	mg/kg	--	3.0E-03	3.0E-08	2.0E-03	2.0E-02	2.0E-02
			TOTAL				**5.8E-02**	**2.3E-03**	**7.2E-03**	**4.4E-01**	**5.0E-01**
Groundwater	Groundwater	PRL S-014 South - Groundwater On-site Direct Contact	Arsenic	--	--	Vascular	--	--	--		--
			Beryllium	--	--	Small intestine; Lungs	--	--	--		--
			Copper	--	--	Gastro-intestinal system	--	--	--		--
			Lead	--	--	--	--	--	--		--
			Vanadium	--	--	Liver and kidney	--	--	--		--
			Zinc	--	--	Blood	--	--	--		--
			Acetone	--	--	Kidney	--	--	--		--
			Benzene	--	--	Blood	--	--	--		--
			Carbon Tetrachloride	--	--	Liver	--	--	--		--
			Chloroform	--	--	Liver	--	--	--		--
			Dichlorodifluoromethane	--	--	Liver	--	--	--		--
			1,1-Dichloroethane	--	--	Kidney	--	--	--		--
			1,1-Dichloroethene	--	--	Liver	--	--	--		--
			cis-1,2-Dichloroethene	--	--	Blood	--	--	--		--
			Ethylbenzene	--	--	Liver and kidney	--	--	--		--
			Propene	--	--	--	--	--	--		--
			Styrene	--	--	Blood and liver	--	--	--		--
			Tetrachloroethene	--	--	Liver	--	--	--		--
			Toluene	--	--	Liver and kidney	--	--	--		--
			1,1,1-Trichloroethane	--	--	--	--	--	--		--
			Trichloroethene	1.6E+00	µg/L	--	7.3E-03	3.7E-02	1.4E-03		4.6E-02
			1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	Brain	--	--	--		--
			Trichlorofluoromethane	--	--	Cellular	--	--	--		--
			1,2,4-Trimethylbenzene	--	--	Lungs	--	--	--		--
			1,3,5-Trimethylbenzene	--	--	Lungs	--	--	--		--
			Xylenes	2.1E+00	µg/L	Decreased body weight	2.9E-05	1.4E-04	2.3E-05		1.9E-04
			PCB-1260 (arochlor 1260)	--	--	--	--	--	--		--
			TOTAL				**7.3E-03**	**3.7E-02**	**1.4E-03**		**4.6E-02**

PRL S-014 South Receptor Hazard Index (soil [0-2 ft bgs] + groundwater) = 4.E-01
PRL S-014 South Receptor Hazard Index (soil [0-10 ft bgs] + groundwater) = 5.E-01

Table A1-5
Risk Characterization Summary - Non-Carcinogens
PRL S-014

Scenario Timeframe: **Future**
Receptor Population: **Resident**
Receptor Age: **Child**

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Primary Target Organ	Non-Carcinogenic Hazard Quotient				
							Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	PRL S-014 North - Soil On-site Direct Contact (0-2 ft bgs)	PCB-1260 (arochlor 1260)	3.4E+00	mg/kg	--	2.0E+00	7.0E-06	9.0E-01	5.0E+00	8.0E+00
			TOTAL				**2.0E+00**	**7.0E-06**	**9.0E-01**	**5.0E+00**	**8.0E+00**
		PRL S-014 North - Soil On-site Direct Contact (0-10 ft bgs)	PCB-1260 (arochlor 1260)	1.3E+00	mg/kg	--	8.0E-01	3.0E-06	4.0E-01	2.0E+00	3.0E+00
			TOTAL				**8.0E-01**	**3.0E-06**	**4.0E-01**	**2.0E+00**	**3.0E+00**
		PRL S-014 South - Soil On-site Direct Contact (0-2 ft bgs)	Arsenic	6.1E+00	mg/kg	Vascular	2.6E-01	4.4E-06	2.3E-02	6.9E-01	9.7E-01
			Beryllium	6.4E-01	mg/kg	Small intestine; Lungs	4.1E-03	2.4E-05	1.2E-04	6.5E-03	1.1E-02
			Copper	2.7E+01	mg/kg	Gastro-intestinal system	9.4E-03	1.6E-07	2.7E-04	1.2E-02	2.2E-02
			Lead	3.2E+01	mg/kg	--	--	--	--	--	--
			Vanadium	5.8E+01	mg/kg	Liver and kidney	1.1E-01	1.8E-06	3.1E-03	1.3E-01	2.4E-01
			Zinc	5.9E+01	mg/kg	Blood	2.5E-02	4.3E-08	7.2E-05	3.1E-03	2.8E-02
			Acetone	1.1E-02	mg/kg	Kidney	1.4E-06	2.6E-06	4.1E-07	--	4.4E-06
			Benzene	1.6E-05	mg/kg	Blood	7.0E-08	7.3E-06	2.0E-08	--	7.4E-06
			Carbon Tetrachloride	1.1E-03	mg/kg	Liver	2.0E-05	1.5E-03	5.7E-06	--	1.5E-03
			Chloroform	1.3E-04	mg/kg	Liver	1.7E-07	9.6E-06	4.9E-08	--	9.8E-06
			Dichlorodifluoromethane	9.8E-05	mg/kg	Liver	6.3E-09	1.3E-06	1.8E-09	--	1.3E-06
			1,1-Dichloroethane	4.6E-04	mg/kg	Kidney	5.9E-08	2.4E-06	1.7E-08	--	2.5E-06
			1,1-Dichloroethene	9.7E-05	mg/kg	Liver	1.4E-07	6.7E-06	4.0E-08	--	6.9E-06
			cis -1,2-Dichloroethene	6.7E-06	mg/kg	Blood	8.6E-09	5.0E-07	2.5E-09	--	5.1E-07
			Ethylbenzene	7.0E-06	mg/kg	Liver and kidney	8.9E-10	1.8E-08	2.6E-10	--	1.9E-08
			Propene	7.6E-06	mg/kg	--	--	--	--	--	--
			Styrene	3.3E-05	mg/kg	Blood and liver	2.1E-09	6.3E-08	6.1E-10	--	6.6E-08
			Tetrachloroethene	2.7E-05	mg/kg	Liver	3.5E-08	2.2E-07	1.0E-08	--	2.7E-07
			Toluene	2.5E-05	mg/kg	Liver and kidney	1.6E-09	1.6E-07	4.6E-10	--	1.6E-07
			1,1,1-Trichloroethane	7.2E-06	mg/kg	--	2.6E-09	2.0E-08	7.6E-10	--	2.3E-08
			Trichloroethene	4.2E-04	mg/kg	--	9.0E-07	5.6E-05	2.6E-07	--	5.7E-05
			1,1,2-Trichloro-1,2,2-trifluoroethane	1.3E-05	mg/kg	Brain	5.6E-12	1.2E-09	1.6E-12	--	1.2E-09
			Trichlorofluoromethane	4.6E-04	mg/kg	Cellular	2.0E-08	1.8E-06	5.7E-09	--	1.8E-06
			1,2,4-Trimethylbenzene	7.7E-05	mg/kg	Lungs	2.0E-08	2.3E-05	5.7E-09	--	2.3E-05
			1,3,5-Trimethylbenzene	5.2E-05	mg/kg	Lungs	1.3E-08	1.6E-05	2.9E-09	--	1.6E-05
			Xylenes	1.2E-04	mg/kg	Decreased body weight	7.4E-10	1.7E-08	2.2E-10	--	1.8E-08
			PCB-1260 (arochlor 1260)	3.7E-02	mg/kg	--	2.0E-02	7.0E-08	1.0E-02	5.0E-02	8.0E-02
			TOTAL				**4.3E-01**	**1.7E-03**	**3.7E-02**	**8.9E-01**	**1.4E+00**
		PRL S-014 South - Soil On-site Direct Contact (0-10 ft bgs)	Arsenic	8.4E+00	mg/kg	Vascular	3.6E-01	2.0E-05	3.1E-02	9.6E-01	1.4E+00
			Beryllium	5.9E-01	mg/kg	Small intestine; Lungs	3.8E-03	7.3E-05	1.1E-04	6.0E-03	1.0E-02
			Copper	2.5E+01	mg/kg	Gastro-intestinal system	8.6E-03	4.8E-07	2.5E-04	1.1E-02	2.0E-02
			Lead	1.2E+01	mg/kg	--	--	--	--	--	--
			Vanadium	7.5E+01	mg/kg	Liver and kidney	1.4E-01	7.6E-06	4.0E-03	1.7E-01	3.1E-01
			Zinc	5.1E+01	mg/kg	Blood	2.2E-03	1.2E-07	6.3E-05	2.7E-03	5.0E-03
			Acetone	1.1E-02	mg/kg	Kidney	1.4E-06	8.6E-06	4.1E-07	--	1.0E-05
			Benzene	1.6E-05	mg/kg	Blood	7.0E-08	2.4E-05	2.0E-08	--	2.4E-05
			Carbon Tetrachloride	1.1E-03	mg/kg	Liver	2.0E-05	4.9E-03	5.7E-06	--	4.9E-03
			Chloroform	1.3E-04	mg/kg	Liver	1.7E-07	3.1E-05	4.9E-08	--	3.1E-05
			Dichlorodifluoromethane	9.8E-05	mg/kg	Liver	6.3E-09	4.2E-06	1.8E-09	--	4.2E-06
			1,1-Dichloroethane	4.6E-04	mg/kg	Kidney	5.9E-08	7.9E-06	1.7E-08	--	8.0E-06
			1,1-Dichloroethene	9.7E-05	mg/kg	Liver	1.4E-07	2.8E-05	4.0E-08	--	2.8E-05
			cis -1,2-Dichloroethene	6.7E-06	mg/kg	Blood	8.6E-09	1.6E-06	2.5E-09	--	1.6E-06
			Ethylbenzene	7.0E-06	mg/kg	Liver and kidney	8.9E-10	6.0E-08	2.6E-10	--	6.1E-08
			Propene	7.6E-06	mg/kg	--	--	--	--	--	--
			Styrene	3.3E-05	mg/kg	Blood and liver	2.1E-09	2.1E-07	6.1E-10	--	2.1E-07
			Tetrachloroethene	2.7E-05	mg/kg	Liver	3.5E-08	7.1E-07	1.0E-08	--	7.6E-07
			Toluene	2.5E-05	mg/kg	Liver and kidney	1.6E-09	5.3E-07	4.6E-10	--	5.3E-07
			1,1,1-Trichloroethane	7.2E-06	mg/kg	--	2.6E-09	6.6E-08	7.6E-10	--	6.9E-08
			Trichloroethene	4.2E-04	mg/kg	--	9.0E-07	1.8E-04	2.6E-07	--	1.8E-04
			1,1,2-Trichloro-1,2,2-trifluoroethane	1.3E-05	mg/kg	Brain	5.6E-12	4.0E-09	1.6E-12	--	4.0E-09
			Trichlorofluoromethane	4.6E-04	mg/kg	Cellular	2.0E-08	5.9E-06	5.7E-09	--	5.9E-06
			1,2,4-Trimethylbenzene	7.7E-05	mg/kg	Lungs	2.0E-08	7.6E-05	5.7E-09	--	7.6E-05
			1,3,5-Trimethylbenzene	5.2E-05	mg/kg	Lungs	1.3E-08	5.3E-05	3.9E-09	--	5.3E-05
			Xylenes	1.2E-04	mg/kg	Decreased body weight	7.4E-10	5.4E-08	2..2e-10	--	5.5E-08
			PCB-1260 (arochlor 1260)	3.7E-02	mg/kg	--	2.0E-02	7.0E-08	1.0E-02	5.0E-02	8.0E-02
			TOTAL				**5.3E-01**	**5.4E-03**	**4.5E-02**	**1.2E+00**	**1.8E+00**
Groundwater	Groundwater	PRL S-014 South - Groundwater On-site Direct Contact	Arsenic			Vascular	--	--	--		--
			Beryllium	--	--	Small intestine; Lungs	--	--	--		--
			Copper	--	--	Gastro-intestinal system	--	--	--		--
			Lead	--	--		--	--	--		--
			Vanadium	--	--	Liver and kidney	--	--	--		--
			Zinc	--	--	Blood	--	--	--		--
			Acetone	--	--	Kidney	--	--	--		--
			Benzene	--	--	Blood	--	--	--		--
			Carbon Tetrachloride	--	--	Liver	--	--	--		--
			Chloroform	--	--	Liver	--	--	--		--
			Dichlorodifluoromethane	--	--	Liver	--	--	--		--
			1,1-Dichloroethane	--	--	Kidney	--	--	--		--
			1,1-Dichloroethene	--	--	Liver	--	--	--		--
			cis -1,2-Dichloroethene	--	--	Blood	--	--	--		--
			Ethylbenzene	--	--	Liver and kidney	--	--	--		--
			Propene	--	--	--	--	--	--		--
			Styrene	--	--	Blood and liver	--	--	--		--
			Tetrachloroethene	--	--	Liver	--	--	--		--
			Toluene	--	--	Liver and kidney	--	--	--		--
			1,1,1-Trichloroethane	--	--	--	--	--	--		--
			Trichloroethene	1.6E+00	µg/L	--	1.7E-02	8.5E-02	2.2E-03		1.0E-01
			1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	Brain	--	--	--		--
			Trichlorofluoromethane	--	--	Cellular	--	--	--		--
			1,2,4-Trimethylbenzene	--	--	Lungs	--	--	--		--
			1,3,5-Trimethylbenzene	--	--	Lungs	--	--	--		--
			Xylenes	2.1E+00	µg/L	Decreased body weight	6.7E-05	3.4E-04	3.7E-05		4.4E-04
			PCB-1260 (arochlor 1260)	--	--	--	--	--	--		--
			TOTAL				**1.7E-02**	**8.5E-02**	**2.2E-03**		**1.0E-01**

PRL S-014 South Receptor Hazard Index (soil [0-2 ft bgs] + groundwater) = 1.E+00
PRL S-014 South Receptor Hazard Index (soil [0-10 ft bgs] + groundwater) = 2.E+00

Table A1-5
Risk Characterization Summary - Non-Carcinogens
PRL S-014

Scenario Timeframe: **Future**
Receptor Population: **Outdoor Occupational**
Receptor Age: **Adult**

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Primary Target Organ	Non-Carcinogenic Hazard Quotient				
							Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	PRL S-014 North - Soil On-site Direct Contact (0-2 ft bgs)	PCB-1260 (arochlor 1260)	3.4E+00	mg/kg	--	8.0E-02	2.0E-06	3.0E-01	--	4.0E-01
			TOTAL				**8.0E-02**	**2.0E-06**	**3.0E-01**	**--**	**4.0E-01**
		PRL S-014 South - Soil On-site Direct Contact (0-2 ft bgs)	Arsenic	6.1E+00	mg/kg	Vascular	9.9E-03	4.4E-06	6.8E-03	--	1.7E-02
			Beryllium	6.4E-01	mg/kg	Small intestine; Lungs	1.6E-04	2.4E-05	3.6E-05	--	2.2E-04
			Copper	2.7E+01	mg/kg	Gastro-intestinal system	3.6E-04	1.6E-07	8.2E-05	--	4.4E-04
			Lead	3.2E+01	mg/kg	--	--	--	--	--	--
			Vanadium	5.8E+01	mg/kg	Liver and kidney	4.1E-03	1.8E-06	9.2E-04	--	5.0E-03
			Zinc	5.9E+01	mg/kg	Blood	9.6E-05	4.3E-08	2.2E-05	--	1.2E-04
			Acetone	1.1E-02	mg/kg	Kidney	5.4E-08	1.5E-08	1.2E-07	--	1.9E-07
			Benzene	1.6E-05	mg/kg	Blood	2.7E-09	5.7E-08	6.1E-09	--	6.6E-08
			Carbon Tetrachloride	1.1E-03	mg/kg	Liver	7.5E-07	1.2E-05	1.7E-06	--	1.4E-05
			Chloroform	1.3E-04	mg/kg	Liver	6.4E-09	7.5E-08	1.5E-08	--	9.6E-08
			Dichlorodifluoromethane	9.8E-05	mg/kg	Liver	2.4E-10	1.1E-08	5.5E-10	--	1.2E-08
			1,1-Dichloroethane	4.6E-04	mg/kg	Kidney	2.3E-09	1.9E-08	5.1E-09	--	2.6E-08
			1,1-Dichloroethene	9.7E-05	mg/kg	Liver	5.3E-09	7.0E-08	1.2E-08	--	8.7E-08
			cis -1,2-Dichloroethene	6.7E-06	mg/kg	Blood	3.3E-10	3.8E-09	7.5E-10	--	4.9E-09
			Ethylbenzene	7.0E-06	mg/kg	Liver and kidney	3.4E-11	1.4E-10	7.8E-11	--	2.5E-10
			Propene	7.6E-06	mg/kg	--	--	--	--	--	--
			Styrene	3.3E-05	mg/kg	Blood and liver	8.0E-11	4.7E-10	1.8E-10	--	7.3E-10
			Tetrachloroethene	2.7E-05	mg/kg	Liver	1.3E-09	1.7E-09	3.1E-09	--	6.1E-09
			Toluene	2.5E-05	mg/kg	Liver and kidney	6.1E-11	1.3E-09	1.4E-10	--	1.5E-09
			1,1,1-Trichloroethane	7.2E-06	mg/kg	--	1.0E-10	1.6E-10	2.3E-10	--	4.9E-10
			Trichloroethene	4.2E-04	mg/kg	--	3.4E-08	4.4E-07	7.9E-08	--	5.5E-07
			1,1,2-Trichloro-1,2,2-trifluoroethane	1.3E-05	mg/kg	Brain	2.1E-13	9.8E-12	4.8E-13	--	1.0E-11
			Trichlorofluoromethane	4.6E-04	mg/kg	Cellular	7.5E-10	1.5E-08	1.7E-09	--	1.7E-08
			1,2,4-Trimethylbenzene	7.7E-05	mg/kg	Lungs	7.5E-10	1.7E-07	1.7E-09	--	1.7E-07
			1,3,5-Trimethylbenzene	5.2E-05	mg/kg	Lungs	5.1E-10	1.2E-07	1.2E-09	--	1.2E-07
			Xylenes	1.2E-04	mg/kg	Decreased body weight	2.8E-11	1.2E-10	6.5E-11	--	2.1E-10
			PCB-1260 (arochlor 1260)	3.7E-02	mg/kg	--	9.0E-04	2.0E-08	3.0E-03	--	4.0E-03
			TOTAL				**1.6E-02**	**4.3E-05**	**1.1E-02**	**--**	**2.7E-02**

Scenario Timeframe: **Future**
Receptor Population: **Indoor Occupational**
Receptor Age: **Adult**

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Primary Target Organ	Non-Carcinogenic Hazard Quotient				
							Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	PRL S-014 North - Soil On-site Direct Contact (0-2 ft bgs)	PCB-1260 (arochlor 1260)	3.4E+00	mg/kg	--	--	--	--	--	--
			TOTAL				--	--	--	--	--
		PRL S-014 South - Soil On-site Direct Contact (0-2 ft bgs)	Acetone	1.1E-02	mg/kg	Kidney	--	4.7E-07	--	--	4.7E-07
			Benzene	1.6E-05	mg/kg	Blood	--	1.8E-06	--	--	1.8E-06
			Carbon Tetrachloride	1.1E-03	mg/kg	Liver	--	3.7E-04	--	--	3.7E-04
			Chloroform	1.3E-04	mg/kg	Liver	--	2.3E-06	--	--	2.3E-06
			Dichlorodifluoromethane	9.8E-05	mg/kg	Liver	--	3.3E-07	--	--	3.3E-07
			1,1-Dichloroethane	4.6E-04	mg/kg	Kidney	--	5.8E-07	--	--	5.8E-07
			1,1-Dichloroethene	9.7E-05	mg/kg	Liver	--	2.2E-06	--	--	2.2E-06
			cis -1,2-Dichloroethene	6.7E-06	mg/kg	Blood	--	1.2E-07	--	--	1.2E-07
			Ethylbenzene	7.0E-06	mg/kg	Liver and kidney	--	4.5E-09	--	--	4.5E-09
			Propene	7.6E-06	mg/kg	--	--	--	--	--	--
			Styrene	3.3E-05	mg/kg	Blood and liver	--	1.5E-08	--	--	1.5E-08
			Tetrachloroethene	2.7E-05	mg/kg	Liver	--	5.4E-08	--	--	5.4E-08
			Toluene	2.5E-05	mg/kg	Liver and kidney	--	3.9E-08	--	--	3.9E-08
			1,1,1-Trichloroethane	7.2E-06	mg/kg	--	--	5.0E-09	--	--	5.0E-09
			Trichloroethene	4.2E-04	mg/kg	--	--	1.4E-05	--	--	1.4E-05
			1,1,2-Trichloro-1,2,2-trifluoroethane	1.3E-05	mg/kg	Brain	--	3.0E-10	--	--	3.0E-10
			Trichlorofluoromethane	4.6E-04	mg/kg	Cellular	--	4.5E-07	--	--	4.5E-07
			1,2,4-Trimethylbenzene	7.7E-05	mg/kg	Lungs	--	5.3E-06	--	--	5.3E-06
			1,3,5-Trimethylbenzene	5.2E-05	mg/kg	Lungs	--	3.8E-06	--	--	3.8E-06
			Xylenes	1.2E-04	mg/kg	Decreased body weight	--	3.6E-09	--	--	3.6E-09
			PCB-1260 (arochlor 1260)	3.7E-02	mg/kg	--	--	--	--	--	--
			TOTAL				--	**4.0E-04**	--	--	**4.0E-04**

Scenario Timeframe: **Future**
Receptor Population: **Construction Worker**
Receptor Age: **Adult**

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Primary Target Organ	Non-Carcinogenic Hazard Quotient				
							Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	PRL S-014 North - Soil On-site Direct Contact (0-15 ft bgs)	PCB-1260 (arochlor 1260)	3.4E+00	mg/kg	--	3.0E-01	8.0E-06	4.0E-01	--	7.0E-01
			TOTAL				**3.0E-01**	**8.0E-06**	**4.0E-01**	**--**	**7.0E-01**
		PRL S-014 South - Soil On-site Direct Contact (0-15 ft bgs)	Arsenic	6.1E+00	mg/kg	Vascular	1.3E-01	5.6E-03	3.8E-02	--	1.7E-01
			Beryllium	6.4E-01	mg/kg	Small intestine; Lungs	1.4E-03	2.0E-02	1.3E-04	--	2.2E-02
			Copper	2.7E+01	mg/kg	Gastro-intestinal system	3.2E-03	1.3E-04	3.0E-04	--	3.6E-03
			Lead	3.2E+01	mg/kg	--	--	--	--	--	--
			Vanadium	5.8E+01	mg/kg	Liver and kidney	5.0E-02	2.1E-03	4.8E-03	--	5.7E-02
			Zinc	5.9E+01	mg/kg	Blood	8.0E-04	3.3E-05	7.6E-05	--	9.1E-04
			Acetone	1.1E-02	mg/kg	Kidney	5.2E-07	6.1E-18	4.9E-07	--	1.0E-06
			Benzene	1.6E-05	mg/kg	Blood	2.6E-08	2.9E-07	2.4E-08	--	3.4E-07
			Carbon Tetrachloride	1.1E-03	mg/kg	Liver	7.2E-06	8.4E-05	6.9E-06	--	9.8E-05
			Chloroform	1.3E-04	mg/kg	Liver	6.2E-08	3.0E-07	5.9E-08	--	4.2E-07
			Dichlorodifluoromethane	9.8E-05	mg/kg	Liver	2.3E-09	1.9E-07	2.2E-09	--	1.9E-07
			1,1-Dichloroethane	4.6E-04	mg/kg	Kidney	2.2E-08	8.7E-08	2.1E-08	--	1.3E-07
			1,1-Dichloroethene	9.7E-05	mg/kg	Liver	5.1E-08	7.4E-07	4.8E-08	--	8.4E-07
			cis -1,2-Dichloroethene	6.7E-06	mg/kg	Blood	3.2E-09	1.6E-08	3.0E-09	--	2.2E-08
			Ethylbenzene	7.0E-06	mg/kg	Liver and kidney	3.3E-10	7.2E-10	3.1E-10	--	1.4E-09
			Propene	7.6E-06	mg/kg	--	--	--	--	--	--
			Styrene	3.3E-05	mg/kg	Blood and liver	7.7E-10	6.1E-10	7.3E-10	--	2.1E-09
			Tetrachloroethene	2.7E-05	mg/kg	Liver	1.3E-08	1.3E-08	1.2E-08	--	3.8E-08
			Toluene	2.5E-05	mg/kg	Liver and kidney	5.8E-10	6.0E-09	5.5E-10	--	7.1E-09
			1,1,1-Trichloroethane	7.2E-06	mg/kg	--	9.7E-10	1.4E-09	9.2E-10	--	3.3E-09
			Trichloroethene	4.2E-04	mg/kg	--	3.3E-07	3.1E-06	3.1E-07	--	3.7E-06
			1,1,2-Trichloro-1,2,2-trifluoroethane	1.3E-05	mg/kg	Brain	2.0E-12	9.4E-11	1.9E-12	--	9.8E-11
			Trichlorofluoromethane	4.6E-04	mg/kg	Cellular	7.2E-09	2.3E-07	6.8E-09	--	2.4E-07
			1,2,4-Trimethylbenzene	7.7E-05	mg/kg	Lungs	7.2E-09	1.8E-07	6.9E-09	--	1.9E-07
			1,3,5-Trimethylbenzene	5.2E-05	mg/kg	Lungs	4.9E-09	1.4E-07	4.7E-09	--	1.5E-07
			Xylenes	1.2E-04	mg/kg	Decreased body weight	2.7E-10	1.4E-11	2.6E-10	--	5.4E-10
			PCB-1260 (arochlor 1260)	3.7E-02	mg/kg	--	9.0E-03	2.0E-08	1.0E-02	--	2.0E-02
			TOTAL				**1.9E-01**	**2.8E-02**	**5.3E-02**	**--**	**2.8E-01**

SECTION A2

PRL S-033

The final human health risk assessment for PRL S-033 is based on 39 confirmation samples collected west of the building within the excavation footprint and analyzed for PAHs. Data collected from unexcavated areas at the site and from imported soil used to fill the excavated area were not included in the risk assessment. This section of the ROD summarizes the results of the final risk assessment for PRL S-033.

A2.1 Identification of Chemicals of Concern

Seven PAHs were identified as COCs for PRL S-033. Table A2-1 presents the soil data summary for PRL S-033. The table includes the range of concentrations for COCs, as well as the frequency of detection (i.e., the number of times the chemical was detected in the samples collected at the site), the EPCs, and how the EPCs were derived. In general, the lower value of the maximum concentration or the upper 95th percent confidence limit on the arithmetic mean was used as the EPC for COCs detected in more than one sample. All samples were used in the calculation of the EPCs and a proxy value of one-half the detection limit was used for nondetects.

A2.2 Exposure Assessment

A conceptual model was developed that describes the potential exposure pathways associated with soil at PRL S-033 (see Figure 2-3 in Section 2.4 of the ROD). Although

PRL S-033 will likely be used for commercial/industrial or mixed-use purposes in the future, the residential exposure scenario was evaluated in the human health risk assessment to provide information for future risk-management decisions.

The following exposure scenario was quantitatively evaluated in the human health risk assessment:

- Exposure of hypothetical future residents (adults) to soil (0 to 5 feet bgs)

The exposure routes that were considered in the risk assessment include incidental soil ingestion, inhalation of resuspended particulates, dermal contact with soil, and the ingestion of homegrown produce.

There was a deviation from the depth intervals used in risk assessments for other McClellan sites because according to the Removal Action report for PRL S-033, confirmation samples were collected between 0-5 ft bgs. Although the majority of the samples were collected from the 0-2 ft bgs depth interval, there was limited information available in the report to confirm what samples were used in the risk calculation.

No potential sources of groundwater contamination were identified at PRL S-033 during the RI (OU B RICS, Volume 2 of 9, PRL S-033, Section 4.2). No contaminants of concern were

identified for groundwater at the site and groundwater samples have not been collected. Therefore, the groundwater exposure scenario was not evaluated.

A2.3 Toxicity Assessment

The toxicity data that were used in the human health risk assessment are summarized on Tables A2-2 and A2-3. Health effects are divided into two categories: cancer and non-cancer effects.

Table A2-2 presents the slope factors used to estimate potential excess lifetime cancer risks associated with exposure to soil at PRL S-033. As shown on Table A2-2, the oral slope factor was used to estimate potential risks associated with dermal exposure. These slope factors were obtained from the California EPA.

Table A2-3 presents the RfDs used to evaluate the potential for non-cancer health effects. The oral RfD was used to estimate potential health effects associated with dermal exposure. The RfDs shown on Table A2-3 were based on pyrene as a surrogate.

A2.4 Risk Characterization

Cal-EPA and EPA toxicity values described above were used in the human health risk assessment along with the exposure information to estimate the potential risks from contacting residual levels of PAHs in soil at PRL S-033. The risk characterization process and calculations are described in Appendix A, Section A.1.4. Tables A2-4 and A2-5 present the potential cancer risk estimates and the non-cancer hazard indexes, respectively, for the residential exposure scenarios at PRL S-033. Only the residential risk results are presented in the Final ROD. These risk results were originally presented in a Removal Action Report for PRL S-033 and represent residual risks after the removal action was completed. Residential PRGs were used as cleanup goals for the removal action. Thus, the occupational scenario was not presented in the Removal Action Report.

The potential cancer risk for soil is as follows:

- Future adult resident (0 to 5 feet bgs depth interval): 6×10^{-7}

The potential noncancer risks for soil are as follows:

- Future adult resident (0 to 5 feet bgs depth interval): <1
- Future child resident (0 to 5 feet bgs depth interval): <1

The risk estimates for the residential scenarios are below EPA's risk management range. These risk estimates are based on a reasonable maximum exposure and were developed taking into account various conservative assumptions about the frequency and duration of the receptor exposure to soil and the toxicity of the COCs. These risk and hazard estimates were for PAHs only. Metals and VOCs were excluded from the assessment, as they were not within the exposure area.

The hazard quotients presented in the Removal Action Report (Weston and Kleinfelder, 2002) were corrected here. As presented in Table A2-5, the values are calculated using EPCs for each PAH and the appropriate chronic toxicity criteria.

A2.5 Uncertainties

There are uncertainties associated with the risk estimates for PRL S-033. The main uncertainties are as follows:

- Potential risks associated with low levels of VOCs in shallow soil gas were not calculated for PRL S-033; therefore, cumulative risks may be underestimated.
- Noncancer health hazards were not evaluated for metals at PRL S-o33; therefore, hazard indexes may be underestimated. Four metals were detected above background levels (arsenic, chromium, cobalt, and nickel). HQs were estimated for these metals by comparing maximum detected concentrations to risk-based soil screening levels for noncarcinogenic effects including the homegrown produce pathway. The HQ for arsenic was based on a maximum measured concentration of 18 mg/kg by Method 6010. The estimated HQs are as follows:

  Arsenic HQ = 2

  Chromium HQ = 0.001 (assuming Cr III)

  Cobalt HQ = 0.04

  Nickel HQ = 0.2

  The combined hazard index for these four metals is 3. Using risk-based screening levels for noncarcinogenic effects that do not include the homegrown produce pathway and maximum detected concentrations, the hazard index is 0.9.
- Groundwater samples have not been collected for the site. Therefore, risks from groundwater are not known and consequently, cumulative risks from potential exposure to all media may be underestimated.
- Although a site inspection noted no apparent spills in the building, the possibility exists that leaks from drums may have occurred and the contents may have migrated through foundation cracks to the subsurface. This results in an uncertainty because sampling was not conducted beneath foundation cracks. Sampling was conducted however, beneath the exposed building foundation during the removal action, and results were non-detect for PAHs.
- Current re-use plans for this site are indefinite, but do not include residential use. Hence, the use of the residential scenario for the site should be considered hypothetical at this time.

Table A2-1
Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations
PRL S-033

Scenario Timeframe:	**Future**						
Medium	**Soil**						
Exposure Medium	**Soil**						
Exposure Point	**Chemical of Concern**	**Concentration Detected (mg/kg) Min**	**Max**	**Frequency of Detection**	**95th UCL Concentration (mg/kg)**	**Statistical Measure[a]**	**Exposure Point Concentration[b] (mg/kg)**
PRL S-033 - Soil On-site Direct Contact (0 - 5 ft bgs)	Benzo(a)anthracene	4.0E-03	1.6E-02	5/39	2.0E-03	95UCL Normal	2.0E-03
	Benzo(b)fluoranthene	7.0E-03	2.1E-02	5/39	3.1E-03	95UCL Normal	3.1E-03
	Benzo(k)fluoranthene	6.0E-03	1.2E-02	3/39	1.5E-03	95UCL Normal	1.5E-03
	Benzo(a)pyrene	1.0E-02	2.0E-02	4/39	2.3E-03	95UCL Normal	2.3E-03
	Chrysene	5.0E-03	1.8E-02	5/39	2.5E-03	95UCL Normal	2.5E-03
	Dibenz(ah)anthracene	2.3E-02	2.9E-02	3/39	3.1E-03	95UCL Normal	3.1E-03
	Indeno(1,2,3-cd)pyrene	7.0E-03	2.4E-02	5/39	2.3E-03	95UCL Normal	2.3E-03

[a] The statistical measure indicates the basis for the exposure point concentration.

[b] The exposure point concentration is the lower value of the maximum concentration or the 95th UCL concentration.

95th UCL = 95 percent upper confidence limit on the mean.

Table A2-2
Cancer Toxicity Data Summary
PRL S-033

Pathway: Ingestion, Dermal						
Chemical of Concern	Oral Cancer Slope Factor	Dermal Cancer Slope Factor	Slope Factor Units	Weight of Evidence [a]	Source	Date
Benzo(a)anthracene	1.2E+00	1.2E+00	$(mg/kg\text{-}day)^{-1}$	B2	PEF	
Benzo(b)fluoranthene	1.2E+00	1.2E+00	$(mg/kg\text{-}day)^{-1}$	B2	PEF	
Benzo(k)fluoranthene	1.2E+00	1.2E+00	$(mg/kg\text{-}day)^{-1}$	B2	PEF	
Benzo(a)pyrene	1.2E+01	1.2E+01	$(mg/kg\text{-}day)^{-1}$	B2	Cal-EPA	2001
Chrysene	1.2E-01	1.2E-01	$(mg/kg\text{-}day)^{-1}$	B2	Cal-EPA	2001
Dibenz(ah)anthracene	7.3E+00	7.3E+00	$(mg/kg\text{-}day)^{-1}$	B2	Cal-EPA	2001
Indeno(1,2,3-cd)pyrene	1.2E+00	1.2E+00	$(mg/kg\text{-}day)^{-1}$	B2	PEF	

Pathway: Inhalation					
Chemical of Concern	InhalationCancer Slope Factor	Slope Factor Units	Weight of Evidence [a]	Source	Date
Benzo(a)anthracene	3.9E-01	$(mg/kg\text{-}day)^{-1}$	B2	PEF	
Benzo(b)fluoranthene	3.9E-01	$(mg/kg\text{-}day)^{-1}$	B2	PEF	
Benzo(k)fluoranthene	3.9E-01	$(mg/kg\text{-}day)^{-1}$	B2	PEF	
Benzo(a)pyrene	3.9E+00	$(mg/kg\text{-}day)^{-1}$	B2	Cal/EPA	2001
Chrysene	3.9E-01	$(mg/kg\text{-}day)^{-1}$	B2	Cal/EPA	2001
Dibenz(ah)anthracene	4.1E+00	$(mg/kg\text{-}day)^{-1}$	B2	Cal/EPA	2001
Indeno(1,2,3-cd)pyrene	3.9E-01	$(mg/kg\text{-}day)^{-1}$	B2	PEF	

[a]Weight of Evidence Classification

A - human carcinogen
B1 and B2 - probable human carcinogen
C - possible human carcinogen
D - not classifiable as a human carcinogen
E - evidence of noncarcinogenicity for humans
Reference = USEPA 1989. Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A). EPA/540/1-89/002. December.

Table A2-3
Non-Cancer Toxicity Data Summary
PRL S-033

Pathway: Ingestion, Dermal									
Chemical of Concern	Chronic/subchronic	Oral RfD	Oral RfD Units	Dermal RfD	Dermal RfD Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ
Benzo(a)anthracene	Chronic	0.03	mg/kg-day	0.03	mg/kg-day			SURROGATE	
Benzo(b)fluoranthene	Chronic	0.03	mg/kg-day	0.03	mg/kg-day			SURROGATE	
Benzo(k)fluoranthene	Chronic	0.03	mg/kg-day	0.03	mg/kg-day			SURROGATE	
Benzo(a)pyrene	Chronic	0.03	mg/kg-day	0.03	mg/kg-day			SURROGATE	
Chrysene	Chronic	0.03	mg/kg-day	0.03	mg/kg-day			SURROGATE	
Dibenz(ah)anthracene	Chronic	0.03	mg/kg-day	0.03	mg/kg-day			SURROGATE	
Indeno(1,2,3-cd)pyrene	Chronic	0.03	mg/kg-day	0.03	mg/kg-day			SURROGATE	

Pathway: Inhalation							
Chemical of Concern	Chronic/subchronic	Inhalation RfD	Oral RfD Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ
Benzo(a)anthracene	Chronic	0.03	mg/kg-day			SURROGATE	
Benzo(b)fluoranthene	Chronic	0.03	mg/kg-day			SURROGATE	
Benzo(k)fluoranthene	Chronic	0.03	mg/kg-day			SURROGATE	
Benzo(a)pyrene	Chronic	0.03	mg/kg-day			SURROGATE	
Chrysene	Chronic	0.03	mg/kg-day			SURROGATE	
Dibenz(ah)anthracene	Chronic	0.03	mg/kg-day			SURROGATE	
Indeno(1,2,3-cd)pyrene	Chronic	0.03	mg/kg-day			SURROGATE	

Notes:
Toxicity values used were accurate as of the date of report submittal and are not necessarily the most current values.
Blank cells indicate information is not available or not applicable.

Cal-EPA = California Environmental Protection Agency
mg/kg-day = milligrams per kilogram per day
PEF = Potency equivalency factor (USEPA 1993)
RfD = reference dose
SURROGATE = RfDs for pyrene used for other polynuclear aromatic hydrocarbons (IRIS 2001)

Table A2-4
Risk Characterization Summary - Carcinogens
PRL S-033

Scenario Timeframe:	**Future**									
Receptor Population:	**Resident**									
Receptor Age:	**Adult**									
						Carcinogenic Risk [a]				
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	PRL S-033 - Soil On-site Direct Contact (0-5 ft bgs)	Benzo(a)anthracene	2.0E-03	mg/kg	4.E-09	1.E-14	2.E-09	1.E-08	2.E-08
			Benzo(b)fluoranthene	3.1E-03	mg/kg	6.E-09	2.E-14	3.E-09	2.E-08	3.E-08
			Benzo(k)fluoranthene	1.5E-03	mg/kg	3.E-09	1.E-14	1.E-09	1.E-08	1.E-08
			Benzo(a)pyrene	2.3E-03	mg/kg	4.E-08	1.E-13	2.E-08	2.E-07	2.E-07
			Chrysene	2.5E-03	mg/kg	5.E-11	2.E-16	2.E-11	2.E-10	2.E-10
			Dibenz(ah)anthracene	3.1E-03	mg/kg	6.E-08	2.E-13	3.E-08	2.E-07	3.E-07
			Indeno(1,2,3-cd)pyrene	2.3E-03	mg/kg	4.E-09	1.E-14	2.E-09	2.E-08	2.E-08
			TOTAL			**1.E-07**	**4.E-13**	**6.E-08**	**4.E-07**	**6.E-07**

[a] These results are based on post-removal action contaminant concentrations as measured in final confirmation samples.

Table A2-5
Risk Characterization Summary - Non-Carcinogens
PRL S-033

Scenario Timeframe:	**Future**										
Receptor Population:	**Resident**										
Receptor Age:	**Adult**										
							Non-Carcinogenic Hazard Quotient [a]				
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Primary Target Organ	Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	PRL S-033 - Soil On-site Direct Contact (0-5 ft bgs)	Benzo(a)anthracene	2.0E-03	mg/kg	--	9.E-08	2.E-12	5.E-08	6.E-07	8.E-07
			Benzo(b)fluoranthene	3.1E-03	mg/kg	--	1.E-07	3.E-12	8.E-08	1.E-06	1.E-06
			Benzo(k)fluoranthene	1.5E-03	mg/kg	--	7.E-08	2.E-12	4.E-08	5.E-07	6.E-07
			Benzo(a)pyrene	2.3E-03	mg/kg	--	1.E-07	2.E-12	6.E-08	7.E-07	9.E-07
			Chrysene	2.5E-03	mg/kg	--	1.E-07	3.E-12	7.E-08	8.E-07	1.E-06
			Dibenz(ah)anthracene	3.1E-03	mg/kg	--	1.E-07	3.E-12	8.E-08	1.E-06	1.E-06
			Indeno(1,2,3-cd)pyrene	2.3E-03	mg/kg	--	1.E-07	2.E-12	6.E-08	7.E-07	9.E-07
			TOTAL				**8.E-07**	**2.E-11**	**5.E-07**	**5.E-06**	**6.E-06**
Scenario Timeframe:	**Future**										
Receptor Population:	**Resident**										
Receptor Age:	**Child**										
							Non-Carcinogenic Hazard Quotient [a]				
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Primary Target Organ	Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	PRL S-033 - Soil On-site Direct Contact (0-5 ft bgs)	Benzo(a)anthracene	2.0E-03	mg/kg	--	9.E-07	5.E-12	4.E-07	2.E-06	3.E-06
			Benzo(b)fluoranthene	3.1E-03	mg/kg	--	1.E-06	8.E-12	6.E-07	3.E-06	5.E-06
			Benzo(k)fluoranthene	1.5E-03	mg/kg	--	6.E-07	4.E-12	3.E-07	1.E-06	2.E-06
			Benzo(a)pyrene	2.3E-03	mg/kg	--	1.E-06	6.E-12	4.E-07	2.E-06	3.E-06
			Chrysene	2.5E-03	mg/kg	--	1.E-06	6.E-12	5.E-07	2.E-06	4.E-06
			Dibenz(ah)anthracene	3.1E-03	mg/kg	--	1.E-06	8.E-12	6.E-07	3.E-06	5.E-06
			Indeno(1,2,3-cd)pyrene	2.3E-03	mg/kg	--	1.E-06	6.E-12	4.E-07	2.E-06	3.E-06
			TOTAL				**7.E-06**	**4.E-11**	**3.E-06**	**1.E-05**	**2.E-05**

[a] These results are based on post-removal action contaminant concentrations as measured in final confirmation samples.

SECTION A3

SA 035

The baseline human health risk assessment estimates what risks the site poses if no action were taken. It provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial actions. This section of the ROD summarizes the results of the baseline risk assessment for SA 035.

A3.1 Identification of Chemicals of Concern

COCs for SA 035 include VOCs, metals, and semivolatile organic compounds (SVOCs) benzoic acid, bis(2-chloroethyl)ether (bis2CEE), and bis(2-ethylhexyl)phthalate. Tables A3-1a through A3-1d present the air, soil gas, groundwater, and soil data summaries, respectively, for the COCs. The tables include the range of concentrations for COCs, as well as the frequency of detection (i.e., the number of times the chemical was detected in the samples collected at the site), the EPCs, and how the EPCs were derived for each of the soil depth intervals. In general, the lower value of the maximum concentration or the upper 95th percent confidence limit on the arithmetic mean was used as the EPC for COCs detected in more than one sample. SVOC data from the RI and 2002 data gaps investigation were combined to revise the EPCs shown on Table A3-1d as compared to those presented in the OU A RICS Addendum.

A3.2 Exposure Assessment

A conceptual model was developed that describes the potential exposure pathways associated with soil and groundwater at SA 035 (see Figure 2-3 in Section 2.4 of the ROD). Although SA 035 will likely be used for commercial/industrial or mixed use purposes in the future, several exposure scenarios were evaluated in the human health risk assessment to provide information for future risk-management decisions.

The following exposure scenarios were quantitatively evaluated in the human health risk assessment:

- Exposure of hypothetical future residents (adults and children) to soil (0 to 2 feet bgs) and groundwater
- Exposure of hypothetical future residents (adults and children) to soil (0 to 10 feet bgs) and groundwater
- Exposure of outdoor workers to soil (0 to 2 feet bgs)
- Exposure of indoor workers to VOCs in indoor air
- Exposure of construction workers to soil (0 to 15 feet bgs)

The exposure routes that were considered in the risk assessment for residents and workers potentially exposed to soil include incidental soil ingestion, inhalation of VOCs (indoor air for residents and ambient air for outdoor workers and construction workers), and resuspended particulates, and dermal contact with soil. For the residential scenarios, the ingestion of homegrown produce was also included. For groundwater, the ingestion, inhalation of VOCs, and dermal contact exposure routes were evaluated. For the indoor worker, potential risk associated with inhalation of VOCs in indoor air was evaluated.

A3.3 Toxicity Assessment

The toxicity data that were used in the human health risk assessment are summarized on Tables A3-2 and A3-3. Health effects are divided into two categories: cancer and noncancer effects.

Table A3-2 presents the slope factors used to estimate potential excess lifetime cancer risks associated with exposure to groundwater, air, and soil at SA 035. As shown on Table A3-2, the oral slope factor was used to estimate potential risks associated with dermal exposure. In addition, inhalation slope factors are not available for bis(2-ethylhexyl)phthalate so the oral slope factor was used to estimate potential risks associated with inhalation exposure. These slope factors were obtained from the IRIS database, Cal-EPA, and NCEA.

Table A3-3 presents the RfDs used to evaluate the potential for noncancer health effects. The oral RfD was used to estimate potential health effects associated with dermal exposure. RfDs are not available for bis2CEE so RfDs for bis(2-chloroisopropyl)ether were used as surrogate values. In addition, inhalation RfDs are not available for benzoic acid and bis(2-ethylhexyl)phthalate, so the oral RfDs were used to evaluate potential health effects from the inhalation exposure route. The reference doses shown on Table A3-3 were obtained from the IRIS database, HEAST, and NCEA. Since the human health risk assessment was conducted, a more conservative reference exposure level (REL) has been made available by Cal-EPA for arsenic. Potential impacts to the human health risk assessment from using the new REL are discussed in Section A3.5.

A3.4 Risk Characterization

Cal-EPA and EPA toxicity values described above were used in the human health risk assessment along with the exposure information to estimate the potential risks from contacting soil at SA 035. The risk characterization process and calculations are described in Appendix A, Section A.1.4. Table A3-4 presents the potential cancer risk estimates for the various exposure scenarios and exposure routes at SA 035. These risk estimates are based on reasonable maximum exposure and were developed taking into account various conservative assumptions about the frequency and duration of the receptors to soil and the toxicity of the COCs.

Both residential and occupational exposure scenarios were evaluated for SA 035. The risk results for these scenarios are summarized below and presented in the risk summary tables at the end of this section.

Prior to the limited excavation, the potential cancer risks for SA 035 were as follows:

- Future adult resident (0 to 2 feet bgs depth interval): 2×10^{-3}
- Future adult resident (0 to 10 feet bgs depth interval): 5×10^{-4}
- Future adult resident (0 to 2 feet bgs depth interval) and groundwater: 2×10^{-3}
- Future adult resident (0 to 10 feet bgs depth interval) and groundwater: 5×10^{-4}

- Outdoor Occupational Worker: 5×10^{-6}
- Indoor Occupational Worker: 2×10^{-7}
- Future Construction Worker: 1×10^{-6}

The risk estimates for the residential scenarios exceed EPA's risk management range. The primary contributor to the potential cancer risks is the homegrown produce pathway for bis2CEE. The risk estimates for the worker scenarios, however, are within or below EPA's risk management range.

Tables A3-5 presents the noncancer hazard indexes for the various exposure scenarios and exposure routes at SA 035. Prior to the limited excavation, the potential noncancer risks were as follows:

- Future adult resident (0 to 2 feet bgs depth interval): <1
- Future adult resident (0 to 10 feet bgs depth interval): <1

- Future child resident (0 to 2 feet bgs depth interval): 2
- Future child resident (0 to 10 feet bgs depth interval): 1

- Future adult resident (0 to 2 feet bgs depth interval) and groundwater: 2
- Future adult resident (0 to 10 feet bgs depth interval) and groundwater: 1

- Future child resident (0 to 2 feet bgs depth interval) and groundwater: 4
- Future child resident (0 to 10 feet bgs depth interval) and groundwater: 4

- Outdoor occupational worker:<1
- Indoor occupational worker: <1
- Future construction worker: <1

The main contributors to the hazard indexes for the residential scenarios are VOCs in groundwater and arsenic in soil (homegrown produce pathway). For the worker scenarios, the hazard indexes are less than 1 indicating that the potential for adverse noncancer health effects for those receptors are unlikely.

Based on the risk assessment, the potential cancer risk from groundwater exposure for future adult residents is 5.0×10^{-5}. The main contributors to the potential cancer risk are carbon tetrachloride and TCE. For groundwater, the noncancer hazard index for the future adult resident is 1.0 and the hazard index for the future child resident is 2.0. The main contributors to the hazard indices are carbon tetrachloride and TCE.

A3.5 Uncertainties

Following are the uncertainties associated with the risk estimates for SA 035:

- Current re-use plans for this site are indefinite, but do not include residential use. Hence, the use of the residential scenario for the site should be considered hypothetical at this time.
- The partition coefficients used to estimate potential risks from the homegrown produce pathway are based on modeled data and not empirical data of plant uptake of COCs. The homegrown produce pathway is the major contributor to the overall risk estimates for the site, and the uncertainties from this pathway are reflected in the overall risk estimates; which may be overestimated or underestimated because of the uncertainties with the plant partition coefficients.
- The majority of the adult carcinogenic risk, for both the 0 to 2 feet bgs and 0 to 10 feet bgs intervals, is attributed to bis2CEE. The bis2CEE was only detected in one sample collected at 0.5 foot bgs at the northern edge of the site. Because there were only seven samples collected from 0 to 2 feet bgs, the EPC for this depth interval was the maximum detected value. Using this maximum value to represent the risk for the entire site within the 0 to 2 feet depth interval is likely to overestimate the risk. If the homegrown produce pathway associated with bis2CEE is excluded, the adult carcinogenic risk associated with this chemical of concerned would be as follows:
  - Future adult resident (0 to 2 feet bgs depth interval): 2.4×10^{-6}
  - Future adult resident (0 to 10 feet bgs depth interval): 6.9×10^{-7}
- Because bis2CEE was considered a non-VOC for the Initial Parcel FS HHRA, the risk estimates described above do not include the indoor or ambient air pathways. However, bis2CEE was evaluated as a VOC in the OU A RICS Addendum (Jacobs, 2002). Therefore, potential inhalation risks for bis2CEE that include the indoor or ambient air pathways were estimated by comparing the exposure point concentrations from the OU A RICS Addendum HHRA to the exposure point concentrations that were calculated in the HHRA for the Initial Parcel FS.

  Potential inhalation risks associated with the indoor or ambient air pathway are as follows:
  - 3.6E-06 for the adult residential scenario (0 to 2 ft bgs)
  - 1.2E-06 for the adult residential scenario (0 to 10 ft bgs)
  - 8.5E-09 for the outdoor occupational scenario
  - 3.8E-26 for the construction worker scenario
- The hazard associated with inhalation exposure for arsenic was calculated using the EPA inhalation RfD of $3x10^{-4}$ mg/kg-day. An updated Cal-EPA REL is now available for arsenic that is more conservative than the EPA RfD. However, since the inhalation route is a minor contributor to the overall hazard estimate for arsenic, use of the updated Cal-EPA value would not significantly change the results of the human health risk assessment.

- Toxicity criteria for some of the VOCs have changed since the human health risk assessment was conducted. VOC risk estimates may increase or decrease by more than an order of magnitude when the VOC risk assessment is updated with the most current toxicity criteria. At this time, the current toxicity values for the following chemicals for SA 035 are different than the toxicity values that were used in the risk assessment:
  - Tetrachloroethene (PCE): The current oral slope factor from California EPA for PCE is approximately an order of magnitude more stringent than the value used in the risk assessment. Consequently, potential risks for PCE may be underestimated in the risk assessment. There is a current reference exposure level (REL) from California EPA for PCE that is more stringent by approximately an order of magnitude, so the HQs for PCE may be underestimated in the risk assessment.
  - Trichloroethene (TCE): There was a slight change to the California EPA oral slope factor for TCE (changed from 0.015 to 0.013 $[mg/kg\text{-}day]^{-1}$) since the risk assessment was performed but this change should not significantly impact the potential cancer risk estimates. The current USEPA National Center for Environmental Assessment (NCEA) oral slope factor for TCE is more stringent by more than an order of magnitude than the value used in the risk assessment. For the inhalation slope factor, NCEA currently has a more stringent value than the value used in the risk assessment. However, the current California EPA inhalation slope factor for TCE is less stringent than the value used in the risk assessment. The current oral RfD from NCEA for TCE is more than an order of magnitude of more stringent than the value used in the risk assessment. The current inhalation RfD for TCE from NCEA and the inhalation RfD derived from the current REL from California EPA are both less stringent than the inhalation RfD used in the risk assessment. Consequently, there is uncertainty associated with the risk results for TCE due to various toxicity factors currently available, and potential risks and Hazard Quotients associated with TCE may be underestimated or overestimated.
  - Acetone: The current oral RfD is less stringent by a factor of 9 than the value used in the risk assessment. Since the inhalation RfD is route-extrapolated value from the oral RfD, the new route extrapolated inhalation RfD is also less stringent than the value used in the risk assessment. Consequently, the Hazard Quotients for acetone may be overestimated.
  - Chloroform: The current NCEA inhalation RfD is more stringent by more than an order of magnitude than the route-extrapolated inhalation RfD used in the risk assessment. Therefore, the HQs for chloroform may be underestimated.
  - Xylenes: The current USEPA oral and inhalation RfDs are more stringent by at least an order of magnitude than the values used in the risk assessment. In addition, the inhalation RfD based on the current California EPA REL is more stringent by an order of magnitude than the value used in the risk assessment. Therefore, HQs for xylenes may be underestimated.

Table A3-1a
Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations
SA 035

Scenario Timeframe:	**Future**
Medium	**Soil Gas**
Exposure Medium	**Soil Gas**

Exposure Point	Chemical of Concern	Concentration Detected (ppbv)		Frequency of Detection	95th UCL Concentration (ppbv)	Statistical Measure[a]	Exposure Point Concentration[b] (ppbv)	Exposure Point Concentration in Soil[c] (mg/kg)
		Min	Max					
SA 035 - Soil Gas	Acetone	7.5E+02	7.5E+02	1/3	1.79E+04	Max Detect	7.5E+02	4.4E-01

[a] The statistical measure indicates the basis for the exposure point concentration.
[b] The exposure point concentration is the lower value of the maximum concentration or the 95th UCL concentration.
[c] Exposure point concentrations for these VOCs in soil are modeled from measured shallow soil gas concentrations.

Table A3-1b
Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations
SA 035

Scenario Timeframe: Future
Medium Air
Exposure Medium Air

			Residential Air Exposure				Construction Worker Air Exposure		Occupational Worker Air Exposure		
Exposure Point	Chemical of Concern	Exposure Point Concentration in Soil (mg/kg)	30-Year Flux Rate 0-2 feet (g/m^2-s)	Exposure Point Concentration Residential Indoor Air 0-2 feet[b] (mg/m^3)	30-Year Flux Rate 0-10 feet (g/m^2-s)	Exposure Point Concentration Residential Indoor Air 0-10 feet[b] (mg/m^3)	1-Year Flux Rate (g/m^2-s)	Exposure Point Concentration Construction Worker Outdoor Air[b] (mg/m^3)	25-Year Flux Rate (g/m^2-s)	Exposure Point Concentration Occupational Indoor Air[b] (mg/m^3)	Exposure Point Concentration Occupational Outdoor Air[b] (mg/m^3)
SA 035 - VOCs in Air	Bis(2-chloroethyl)ether[c]	2.0E-01	1.30E-11	7.4E-06	8.10E-12	4.7E-06	2.00E-27	7.8E-24	9.80E-12	1.2E-06	3.8E-08
	Acetone[a]	4.4E-01	9.19E-11	5.3E-05	9.19E-11	5.3E-05	3.18E-20	1.2E-16	--	9.0E-06	3.1E-07

[a] The exposure point concentration for this VOC in soil is modeled from a measured shallow soil gas concentration.

[b] Emissions from soil and resulting air concentrations were estimated from models using the exposure point concentration modeled in soil.

[c] Exposure point concentrations, flux rates, and air concentrations are from the OU A RICS Addendum (Jacobs 2002). In the OU A RICS Addendum risk assessment, bis(2-chloroethyl)ether was evaluated as a VOC and the vapor inhalation pathways (indoor and ambient air) were included in the risk calculations. In the Initial Parcel Feasibility Study (IP FS), bis(2-chloroethyl)ether was evaluated as a non-VOC and the vapor inhalation pathways (indoor and ambient air) were not included in the calculations. Cumulative risks reported in the IP FS would not significantly change if bis(2-chloroethyl)ether was evaluated as a VOC

Table A3-1c
Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations
SA 035

Scenario Timeframe:	**Future**						
Medium	**Groundwater**						
Exposure Medium	**Groundwater**						
Exposure Point	**Chemical of Concern**	**Concentration Detected (µg/L) Min**	**Max**	**Frequency of Detection**	**95th UCL Concentration (µg/L)**	**Statistical Measure[a]**	**Exposure Point Concentration[b] (µg/L)**
SA 035 - Groundwater On site Direct Contact	Acetone	--	3.9E+00	1/1	--[c]	Max Detect	3.9E+00
	Carbon tetrachloride	1.7E+00	2.4E+00	2/3	3.3E+00	Max Detect	2.4E+00
	Chloroform	9.2E-01	9.2E-01	1/3	9.4E+01	Max Detect	9.2E-01
	Tetrachloroethene	3.7E-01	3.7E-01	1/3	5.1E-01	Max Detect	3.7E-01
	Trichloroethene	1.6E+00	1.3E+01	3/3	1.6E+01	Max Detect	1.3E+01
	Xylenes	2.1E+00	2.1E+00	3/3	6.4E+02	Max Detect	2.1E+00

[a] The statistical measure indicates the basis for the exposure point concentration.

[b] The exposure point concentration is the lower value of the maximum concentration or the 95th UCL concentration.

[c] Due to the limited data set, a statistical analyses could not be conducted to determine the concentration.

Table A3-1d
Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations
SA 035

Scenario Timeframe:	**Future**						
Medium	**Soil**						
Exposure Medium	**Soil**						
Exposure Point	**Chemical of Concern**	**Concentration Detected (mg/kg)**		**Frequency of Detection**	**95th UCL Concentration (mg/kg)**	**Statistical Measure[a]**	**Exposure Point Concentration[b] (mg/kg)**
		Min	**Max**				
SA 035 - Soil On-site Direct Contact (0-2 ft bgs)	Arsenic	1.1E+00	1.2E+01	8/8	9.4E+00	95UCL Lognormal	9.4E+00
	Barium	1.1E+02	2.7E+02	8/8	2.0E+02	95UCL Normal	2.0E+02
	Beryllium	3.2E-01	5.5E-01	8/8	5.0E-01	95UCL Normal	5.0E-01
	Copper	1.4E+01	3.2E+01	8/8	2.5E+01	95UCL Normal	2.5E+01
	Lead	6.6E+00	5.2E+01	8/8	5.0E+01	95UCL Lognormal	5.0E+01
	Zinc	3.1E+01	6.3E+01	8/8	5.5E+01	95UCL Normal	5.5E+01
	Benzoic Acid	2.3E-01	2.3E-01	1/5	2.0E-01	95UCL Lognormal	2.0E-01
	Bis(2-chloroethyl)ether	4.6E-01	4.6E-01	1/7	7.4E-01	Max Detect	4.6E-01
	Bis(2-ethylhexyl)phthalate	1.5E-01	1.5E-01	1/7	1.7E-01	Max Detect	1.5E-01
SA 035 - Soil On-site Direct Contact (0-10 ft bgs)	Arsenic	1.1E+00	1.2E+01	11/11	5.6E+00	95UCL Lognormal	5.6E+00
	Barium	1.1E+02	3.7E+02	11/11	2.3E+02	95UCL Lognormal	2.3E+02
	Beryllium	2.9E-01	6.3E-01	11/11	5.0E-01	95UCL Normal	5.0E-01
	Copper	1.3E+01	3.2E+01	11/11	2.3E+01	95UCL Normal	2.3E+01
	Lead	4.6E+00	5.2E+01	11/11	3.0E+01	95UCL Lognormal	3.0E+01
	Zinc	2.7E+01	6.3E+01	11/11	5.0E+01	95UCL Normal	5.0E+01
	Benzoic Acid	2.3E-01	2.3E-01	1/10	1.3E-01	95UCL Lognormal	1.3E-01
	Bis(2-chloroethyl)ether	4.6E-01	4.6E-01	1/14	1.3E-01	95UCL Lognormal	1.3E-01
	Bis(2-ethylhexyl)phthalate	6.6E-02	2.0E-01	3/14	1.1E-01	95UCL Lognormal	1.1E-01
SA 035 - Soil On-site Direct Contact (0-15 ft bgs)	Arsenic	1.1E+00	1.2E+01	11/11	5.6E+00	95UCL Lognormal	5.6E+00
	Barium	1.1E+02	3.7E+02	11/11	2.3E+02	95UCL Lognormal	2.3E+02
	Beryllium	2.9E-01	6.3E-01	11/11	5.0E-01	95UCL Normal	5.0E-01
	Copper	1.3E+01	3.2E+01	11/11	2.3E+01	95UCL Normal	2.3E+01
	Lead	4.6E+00	5.2E+01	11/11	3.0E+01	95UCL Lognormal	3.0E+01
	Zinc	2.7E+01	6.3E+01	11/11	5.0E+01	95UCL Normal	5.0E+01
	Benzoic Acid	2.3E-01	2.3E-01	1/10	1.3E-01	95UCL Lognormal	1.3E-01
	Bis(2-chloroethyl)ether	4.6E-01	4.6E-01	1/14	1.3E-01	95UCL Lognormal	1.3E-01
	Bis(2-ethylhexyl)phthalate	6.6E-02	2.0E-01	3/14	1.1E-01	95UCL Lognormal	1.1E-01

[a] The statistical measure indicates the basis for the exposure point concentration.

[b] The exposure point concentration is the lower value of the maximum concentration or the 95th UCL concentration.

Table A3-2
Cancer Toxicity Data Summary
SA 035

Pathway: Ingestion, Dermal						
Chemical of Concern	Oral Cancer Slope Factor	Dermal Cancer Slope Factor	Slope Factor Units	Weight of Evidence[a]	Source	Date
Arsenic	1.5	1.5	$(mg/kg\text{-}day)^{-1}$	A	IRIS	2002
Beryllium				B2		
Lead				B2	Cal-EPA	2002
Benzoic Acid						
Bis(2-chloroethyl)ether	2.5	2.5	$(mg/kg\text{-}day)^{-1}$	B2	Cal-EPA	2003
Bis(2-ethylhexyl)phthalate	0.014	0.014	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2003
Carbon tetrachloride	0.15	0.15	$(mg/kg\text{-}day)^{-1}$	B2	Cal-EPA	2002
Chloroform	0.031	0.031	$(mg/kg\text{-}day)^{-1}$	B2	Cal-EPA	2002
Tetrachloroethene	0.052	0.052	$(mg/kg\text{-}day)^{-1}$		NCEA	2002
Trichloroethene	0.015	0.015	$(mg/kg\text{-}day)^{-1}$	B2/C	NCEA	2002
Pathway: Inhalation						
Chemical of Concern	InhalationCancer Slope Factor	Slope Factor Units	Weight of Evidence[a]	Source	Date	
Arsenic	15	$(mg/kg\text{-}day)^{-1}$	A	IRIS	2002	
Beryllium	8.4	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2002	
Lead			B2	Cal-EPA	2002	
Benzoic Acid	NA	NA	NA			
Bis(2-chloroethyl)ether	2.5	$(mg/kg\text{-}day)^{-1}$	B2	Cal-EPA	2003	
Bis(2-ethylhexyl)phthalate	0.014	$(mg/kg\text{-}day)^{-1}$	B2	ROUTE		
Carbon tetrachloride	0.15	$(mg/kg\text{-}day)^{-1}$	B2	Cal-EPA	2002	
Chloroform	0.08	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2002	
Tetrachloroethene	0.021	$(mg/kg\text{-}day)^{-1}$		Cal-EPA	2002	
Trichloroethene	0.01	$(mg/kg\text{-}day)^{-1}$	B2/C	NCEA	2002	

[a]Weight of Evidence Classification

A - human carcinogen
B1 and B2 - probable human carcinogen
C - possible human carcinogen
D - not classifiable as a human carcinogen
E - evidence of noncarcinogenicity for humans
Reference = USEPA 1989. Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A). EPA/540/1-89/002. December.

Table A3-3
Non-Cancer Toxicity Data Summary
SA 035

Pathway: Ingestion, Dermal									
Chemical of Concern	Chronic/subchronic	Oral RfD	Oral RfD Units	Dermal RfD	Dermal RfD Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ
Arsenic	Chronic	0.0003	mg/kg-day	0.0003	mg/kg-day	Vascular	3	IRIS	2002
Barium	Chronic	0.07	mg/kg-day	0.07	mg/kg-day			IRIS	2002
Beryllium	Chronic	0.002	mg/kg-day	0.002	mg/kg-day	Small intestine; Lungs	300	IRIS	2002
Copper	Chronic	0.037	mg/kg-day	0.037	mg/kg-day	Gastro-intestinal system		HEAST	1997
Lead	Chronic		mg/kg-day		mg/kg-day				
Zinc	Chronic	0.3	mg/kg-day	0.3	mg/kg-day	Blood	3	IRIS	2002
Benzoic Acid	Chronic	4	mg/kg-day	4	mg/kg-day		1	IRIS	2003
Bis(2-chloroethyl)ether	Chronic	0.04	mg/kg-day	0.04	mg/kg-day			SURROGATE	
Bis(2-ethylhexyl)phthalate	Chronic	0.02	mg/kg-day	0.02	mg/kg-day	Liver	1000	IRIS	2003
Acetone	Chronic	0.10	mg/kg-day	0.10	mg/kg-day	Kidney	1000	IRIS	2002
Carbon tetrachloride	Chronic	0.0007	mg/kg-day	0.0007	mg/kg-day	Liver		IRIS	2002
Chloroform	Chronic	0.01	mg/kg-day	0.01	mg/kg-day	Liver		IRIS	2002
Tetrachloroethene	Chronic	0.01	mg/kg-day	0.01	mg/kg-day	Liver	300	IRIS	2002
Trichloroethene	Chronic	0.006	mg/kg-day	0.006	mg/kg-day			NCEA	2002
Xylenes	Chronic	2.00	mg/kg-day	2.00	mg/kg-day	Decreased body weight	1000	IRIS	2002
Pathway: Inhalation									
Chemical of Concern	Chronic/subchronic	Inhalation RfD	Inhalation RfD Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ		
Arsenic	Chronic	0.0003	mg/kg-day	Vascular	3	ROUTE			
Barium	Chronic	0.00014	mg/kg-day			HEAST	1997		
Beryllium	Chronic	0.0000057	mg/kg-day	Small intestine; Lungs	300	IRIS	2002		
Copper	Chronic	0.037	mg/kg-day	Gastro-intestinal system		ROUTE			
Lead	Chronic		mg/kg-day						
Zinc	Chronic	0.3	mg/kg-day	Blood	3	ROUTE			
Benzoic Acid	Chronic	4	mg/kg-day		1	ROUTE			
Bis(2-chloroethyl)ether	Chronic	0.03	mg/kg-day			SURROGATE			
Bis(2-ethylhexyl)phthalate	Chronic	0.02	mg/kg-day	Liver	1000	ROUTE			
Acetone	Chronic	0.1	mg/kg-day	Kidney	1000	ROUTE			
Carbon tetrachloride	Chronic	0.00057	mg/kg-day	Liver		NCEA	2002		
Chloroform	Chronic	0.01	mg/kg-day	Liver		ROUTE			
Tetrachloroethene	Chronic	0.1	mg/kg-day	Liver	300	NCEA	2002		
Trichloroethene	Chronic	0.006	mg/kg-day			ROUTE			
Xylenes	Chronic	2	mg/kg-day	Decreased body weight	1000	ROUTE			

Notes:
Toxicity values used were accurate as of the date of report submittal and are not necessarily the most current values.
Blank cells indicate information is not available or not applicable.

Cal-EPA = California Environmental Protection Agency
IRIS = Integrated Risk Information System
HEAST = Health Effects Assessment Summary Tables
mg/kg-day = milligrams per kilogram per day
NCEA = National Center for Environmental Assessment
RfD = reference dose
ROUTE = route-to-route extrapolated value (e.g., oral RfD used for inhalation RfD)
SURROGATE = RfDs for bis(2-chloroisopropyl)ether used for bis(2-chloroethyl)ether

Table A3-4
Risk Characterization Summary - Carcinogens
SA 035

Scenario Timeframe:	**Future**
Receptor Population:	**Resident**
Receptor Age:	**Adult**

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Carcinogenic Risk				
						Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	SA 035 - Soil On-site Direct Contact (0-2 ft bgs)	Arsenic	9.4E+00	mg/kg	2.2E-05	2.3E-08	2.1E-06	1.0E-04	1.2E-04
			Beryllium	5.0E-01	mg/kg	--	7.0E-10	--	--	7.0E-10
			Lead	5.0E+01	mg/kg	--	--	--	--	--
			Benzoic Acid	2.0E-01	mg/kg	NA	NA	NA	NA	NA
			Bis(2-chloroethyl)ether[a]	4.6E-01	mg/kg	1.8E-06	1.1E-11	5.8E-07	1.6E-03	1.6E-03
			Bis(2-ethylhexyl)phthalate	1.5E-01	mg/kg	3.2E-09	1.9E-14	1.0E-09	7.6E-09	1.2E-08
			Carbon tetrachloride	--	--	--	--	--	--	--
			Chloroform	--	--	--	--	--	--	--
			Tetrachloroethene	--	--	--	--	--	--	--
			Trichloroethene	--	--	--	--	--	--	--
			TOTAL			**2.4E-05**	**2.4E-08**	**2.7E-06**	**1.7E-03**	**2.E-03**
		SA 035 - Soil On-site Direct Contact (0-10 ft bgs)	Arsenic	5.6E+00	mg/kg	1.3E-05	1.4E-08	1.3E-06	6.1E-05	7.5E-05
			Beryllium	5.0E-01	mg/kg	--	7.2E-10	--	--	7.2E-10
			Lead	3.0E+01	mg/kg	--	--	--	--	--
			Benzoic Acid	1.3E-01	mg/kg	NA	NA	NA	NA	NA
			Bis(2-chloroethyl)ether[a]	1.3E-01	mg/kg	5.2E-07	3.1E-12	1.7E-07	4.5E-04	4.5E-04
			Bis(2-ethylhexyl)phthalate	1.1E-01	mg/kg	2.5E-09	1.5E-14	8.0E-10	5.9E-09	9.2E-09
			Carbon tetrachloride	--	--	--	--	--	--	--
			Chloroform	--	--	--	--	--	--	--
			Tetrachloroethene	--	--	--	--	--	--	--
			Trichloroethene	--	--	--	--	--	--	--
			TOTAL			**5.2E-07**	**3.1E-12**	**1.7E-07**	**4.5E-04**	**5.E-04**
Groundwater	Groundwater	SA 035 - Groundwater On-site Direct Contact	Arsenic	--	--	--	--	--	--	--
			Beryllium	--	--	--	--	--	--	--
			Lead	--	--	--	--	--	--	--
			Benzoic Acid	--	--	--	--	--	--	--
			Bis(2-chloroethyl)ether[a]	--	--	--	--	--	--	--
			Bis(2-ethylhexyl)phthalate	--	--	--	--	--	--	--
			Carbon tetrachloride	2.4E+00	µg/L	5.4E-06	2.7E-05	1.4E-06	--	3.4E-05
			Chloroform	9.2E-01	µg/L	4.2E-07	5.5E-06	3.7E-08	--	6.0E-06
			Tetrachloroethene	3.7E-01	µg/L	2.9E-07	5.8E-07	1.8E-07	--	1.1E-06
			Trichloroethene	1.3E+01	µg/L	2.9E-06	9.7E-06	4.9E-07	--	1.3E-05
			TOTAL			**9.0E-06**	**4.2E-05**	**2.2E-06**	--	**5.E-05**

TOTAL (soil [0-2 ft bgs] + groundwater) = 2.E-03
TOTAL (soil [0-10 ft bgs] + groundwater) = 5.E-04

Table A3-4
Risk Characterization Summary - Carcinogens
SA 035

Scenario Timeframe:	**Future**
Receptor Population:	**Outdoor Occupational**
Receptor Age:	**Adult**

						Carcinogenic Risk				
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	SA 035 - Soil On-site Direct Contact (0-2 ft bgs)	Arsenic	9.4E+00	mg/kg	2.5E-06	1.1E-88	1.7E-06	--	4.2E-06
			Beryllium	5.0E-01	mg/kg	--	3.3E-10	--	--	3.3E-10
			Lead	5.0E+01	mg/kg	--	--	--	--	--
			Benzoic Acid	2.0E-01	mg/kg	--	--	--	--	--
			Bis(2-chloroethyl)ether[a]	4.6E-01	mg/kg	2.0E-07	5.0E-12	4.6E-07	--	6.6E-07
			Bis(2-ethylhexyl)phthalate	1.5E-01	mg/kg	3.5E-10	8.9E-15	8.1E-10	--	1.2E-09
			TOTAL			**2.7E-06**	**3.4E-10**	**2.2E-06**	**--**	**5.E-06**

Scenario Timeframe:	**Future**
Receptor Population:	**Indoor Occupational**
Receptor Age:	**Adult**

						Carcinogenic Risk				
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	SA 035 - Soil On-site Direct Contact (0-2 ft bgs)	Arsenic	9.4E+00	mg/kg	--	--	--	--	--
			Beryllium	5.0E-01	mg/kg	--	--	--	--	--
			Lead	5.0E+01	mg/kg	--	--	--	--	--
			Benzoic Acid	2.0E-01	mg/kg	--	--	--	--	--
			Bis(2-chloroethyl)ether[a]	0.19[b]	mg/kg	--	2.1E-07	--	--	2.1E-07
			Bis(2-ethylhexyl)phthalate	1.7E-01	mg/kg	--	--	--	--	--
			TOTAL			--	**2.1E-07**	**--**	**--**	**2.E-07**

Scenario Timeframe:	**Future**
Receptor Population:	**Construction Worker**
Receptor Age:	**Adult**

						Carcinogenic Risk				
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	SA 035 - Soil On-site Direct Contact (0-15 ft bgs)	Arsenic	9.4E+00	mg/kg	5.7E-07	2.4E-07	1.6E-07	--	9.7E-07
			Beryllium	5.0E-01	mg/kg	--	1.2E-08	--	--	1.2E-08
			Lead	5.0E+01	mg/kg	--	--	--	--	--
			Benzoic Acid	2.0E-01	mg/kg	--	--	--	--	--
			Bis(2-chloroethyl)ether[a]	1.3E-01	mg/kg	2.2E-08	5.8E-14	2.1E-08	--	4.3E-08
			Bis(2-ethylhexyl)phthalate	1.1E-01	mg/kg	1.1E-10	2.8E-16	1.0E-10	--	2.1E-10
			TOTAL			**5.9E-07**	**2.5E-07**	**1.8E-07**	**--**	**1.E-06**

Notes:

[a]In the OU A RICS Addendum risk assessment, bis(2-chloroethyl)ether was evaluated as a VOC and the vapor inhalation pathways (indoor and ambient air) were included in the risk calculations. In the Initial Parcel Feasibility Study (IP FS), bis(2-chloroethyl)ether was evaluated as a non-VOC and the vapor inhalation pathways (indoor and ambient air) were not included in the calculations. Exposure point concentrations and risk results for the indoor occupational scenario on this table are from the OU A RICS Addendum risk assessment (Jacobs

[b]See Table A3-1b for the origin of this indoor air occupational exposure point concentration.

Table A3-5
Risk Characterization Summary - Non-Carcinogens
SA 035

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Primary Target Organ	Non-Carcinogenic Hazard Quotient				
							Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	SA 035 - Soil On-site Direct Contact (0-2 ft bgs)	Arsenic	9.4E+00	mg/kg	Vascular	4.3E-02	9.5E-06	5.1E-03	3.9E-01	4.4E-01
			Barium	2.0E+02	mg/kg		3.9E-03	4.2E-04	1.5E-04	1.6E-02	2.0E-02
			Beryllium	5.0E-01	mg/kg	Small intestine; Lungs	3.4E-04	2.7E-05	1.4E-05	1.8E-03	2.2E-03
			Copper	2.5E+01	mg/kg	Gastro-intestinal system	9.4E-04	2.1E-07	3.8E-05	3.9E-03	4.9E-03
			Lead	5.0E+01	mg/kg		--	--	--	--	0.0E+00
			Zinc	5.5E+01	mg/kg	Blood	2.5E-04	5.5E-08	9.9E-03	1.0E-03	1.1E-02
			Benzoic Acid	2.0E-01	mg/kg		7.0E-08	8.7E-13	2.8E-08	5.4E-05	5.4E-05
			Bis(2-chloroethyl)ether[a]	4.6E-01	mg/kg		1.6E-05	2.6E-10	6.3E-06	2.7E-02	2.7E-02
			Bis(2-ethylhexyl)phthalate	1.5E-01	mg/kg	Liver	9.9E-06	1.1E-10	4.0E-06	4.7E-05	6.1E-05
			Acetone	4.4E-01	mg/kg	Kidney	6.6E-06	1.5E-04	2.4E-06	--	1.6E-04
			Carbon tetrachloride	--	--	Liver	--	--	--	--	--
			Chloroform	--	--	Liver	--	--	--	--	--
			Tetrachloroethene	--	--	Liver	--	--	--	--	--
			Trichloroethene	--	--		--	--	--	--	--
			Xylenes	--	--	Decreased body weight	--	--	--	--	--
			TOTAL				**4.8E-02**	**6.1E-04**	**1.5E-02**	**4.4E-01**	**5.E-01**
		SA 035 - Soil On-site Direct Contact (0-10 ft bgs)	Arsenic	5.6E+00	mg/kg	Vascular	2.6E-02	5.7E-06	3.1E-03	2.3E-01	2.6E-01
			Barium	2.3E+02	mg/kg		4.5E-03	4.9E-04	1.8E-04	1.9E-02	2.4E-02
			Beryllium	5.0E-01	mg/kg	Small intestine; Lungs	3.6E-04	2.8E-05	1.4E-05	1.9E-03	2.3E-03
			Copper	2.3E+01	mg/kg	Gastro-intestinal system	8.7E-04	1.9E-07	3.5E-05	3.6E-03	4.5E-03
			Lead	3.0E+01	mg/kg		--	--	--	--	0.0E+00
			Zinc	5.0E+01	mg/kg	Blood	2.3E-04	5.1E-08	9.1E-06	9.5E-04	1.2E-03
			Benzoic Acid	1.3E-01	mg/kg		4.6E-08	5.7E-13	1.8E-08	3.5E-05	3.5E-05
			Bis(2-chloroethyl)ether[a]	1.3E-01	mg/kg		4.5E-06	7.5E-11	1.8E-06	7.7E-03	7.7E-03
			Bis(2-ethylhexyl)phthalate	1.1E-01	mg/kg	Liver	7.7E-06	8.8E-11	3.1E-06	3.6E-05	4.7E-05
			Acetone	4.4E-01	mg/kg	Kidney	6.0E-06	1.5E-04	2.4E-06	--	1.6E-04
			Carbon tetrachloride	--	--	Liver	--	--	--	--	--
			Chloroform	--	--	Liver	--	--	--	--	--
			Tetrachloroethene	--	--	Liver	--	--	--	--	--
			Trichloroethene	--	--		--	--	--	--	--
			Xylenes	--	--	Decreased body weight	--	--	--	--	--
			TOTAL				**3.2E-02**	**6.7E-04**	**3.3E-03**	**2.6E-01**	**3.E-01**
Groundwater	Groundwater	SA 035 - Groundwater On-site Direct Contact	Arsenic	--	--	Vascular	--	--	--	--	--
			Barium	--	--		--	--	--	--	--
			Beryllium	--	--	Small intestine; Lungs	--	--	--	--	--
			Copper	--	--	Gastro-intestinal system	--	--	--	--	--
			Lead	--	--		--	--	--	--	--
			Zinc	--	--	Blood	--	--	--	--	--
			Benzoic Acid	--	--		--	--	--	--	--
			Bis(2-chloroethyl)ether[a]	--	--		--	--	--	--	--
			Bis(2-ethylhexyl)phthalate	--	--	Liver	--	--	--	--	--
			Acetone	3.9E+00	µg/L	Kidney	1.1E-03	5.3E-03	4.6E-06	--	6.4E-03
			Carbon tetrachloride	2.4E+00	µg/L	Liver	9.4E-02	5.8E-01	2.9E-02	--	7.0E-01
			Chloroform	9.2E-01	µg/L	Liver	2.5E-03	1.3E-02	2.4E-04	--	1.6E-02
			Tetrachloroethene	3.7E-01	µg/L	Liver	1.0E-03	5.1E-04	7.3E-04	--	2.2E-03
			Trichloroethene	1.3E+01	µg/L		5.9E-02	3.0E-01	1.1E-02	--	3.7E-01
			Xylenes	2.1E+00	µg/L	Decreased body weight	2.9E-05	1.4E-04	2.3E-05	--	1.9E-04
			TOTAL				**1.6E-01**	**9.0E-01**	**4.1E-02**	--	**1.E+00**

Receptor Hazard Index (soil [0-2 ft bgs] + groundwater) = 2.E+00
Receptor Hazard Index (soil [0-10 ft bgs] + groundwater) = 1.E+00

Table A3-5
Risk Characterization Summary - Non-Carcinogens
SA 035

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Primary Target Organ	Non-Carcinogenic Hazard Quotient				
							Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	SA 035 - Soil On-site Direct Contact (0-2 ft bgs)	Arsenic	9.4E+00	mg/kg	Vascular	4.0E-01	2.2E-05	3.5E-02	1.1E+00	1.5E+00
			Barium	2.0E+02	mg/kg		3.6E-02	9.8E-04	1.0E-03	4.4E-02	8.2E-02
			Beryllium	5.0E-01	mg/kg	Small intestine; Lungs	3.2E-03	6.3E-05	9.3E-05	5.1E-03	8.5E-03
			Copper	2.5E+01	mg/kg	Gastro-intestinal system	8.8E-03	4.9E-07	2.5E-04	1.1E-02	2.0E-02
			Lead	5.0E+01	mg/kg		--	--	--	--	0.0E+00
			Zinc	5.5E+01	mg/kg	Blood	2.3E-03	1.3E-07	6.7E-05	2.8E-03	5.2E-03
			Benzoic Acid	2.0E-01	mg/kg		6.5E-07	2.0E-12	1.9E-07	1.5E-04	1.5E-04
			Bis(2-chloroethyl)ether[a]	4.6E-01	mg/kg		1.5E-04	6.2E-10	4.3E-05	7.5E-02	7.5E-02
			Bis(2-ethylhexyl)phthalate	1.5E-01	mg/kg	Liver	9.3E-05	2.6E-10	2.7E-05	1.3E-04	2.5E-04
			Acetone	4.4E-01	mg/kg	Kidney	5.6E-05	3.4E-04	1.6E-05	--	4.1E-04
			Carbon tetrachloride	--	--	Liver	--	--	--	--	--
			Chloroform	--	--	Liver	--	--	--	--	--
			Tetrachloroethene	--	--	Liver	--	--	--	--	--
			Trichloroethene	--	--		--	--	--	--	--
			Xylenes	--	--	Decreased body weight	--	--	--	--	--
			TOTAL				**4.5E-01**	**1.4E-03**	**3.6E-02**	**1.2E+00**	**2.E+00**
		SA 035 - Soil On-site Direct Contact (0-10 ft bgs)	Arsenic	5.6E+00	mg/kg	Vascular	2.4E-01	1.3E-05	2.1E-02	6.4E-01	9.0E-01
			Barium	2.3E+02	mg/kg		4.2E-02	1.1E-03	1.2E-03	5.2E-02	9.6E-02
			Beryllium	5.0E-01	mg/kg	Small intestine; Lungs	3.3E-03	6.5E-05	9.6E-05	5.3E-03	8.8E-03
			Copper	2.3E+01	mg/kg	Gastro-intestinal system	8.1E-03	4.5E-07	2.4E-04	9.9E-03	1.8E-02
			Lead	3.0E+01	mg/kg		--	--	--	--	0.0E+00
			Zinc	5.0E+01	mg/kg	Blood	2.1E-03	1.2E-07	6.2E-05	2.6E-03	4.8E-03
			Benzoic Acid	1.3E-01	mg/kg		4.3E-07	1.3E-12	1.2E-07	9.7E-05	9.8E-05
			Bis(2-chloroethyl)ether[a]	1.3E-01	mg/kg		4.2E-05	1.8E-10	1.2E-05	2.1E-02	2.1E-02
			Bis(2-ethylhexyl)phthalate	1.1E-01	mg/kg	Liver	7.2E-05	2.1E-10	2.1E-05	1.0E-04	1.9E-04
			Acetone	4.4E-01	mg/kg	Kidney	5.6E-05	3.4E-04	1.6E-05	--	4.1E-04
			Carbon tetrachloride	--	--	Liver	--	--	--	--	--
			Chloroform	--	--	Liver	--	--	--	--	--
			Tetrachloroethene	--	--	Liver	--	--	--	--	--
			Trichloroethene	--	--		--	--	--	--	--
			Xylenes	--	--	Decreased body weight	--	--	--	--	--
			TOTAL				**3.0E-01**	**1.5E-03**	**2.3E-02**	**7.3E-01**	**1.E+00**
Groundwater	Groundwater	SA 035 - Groundwater On-site Direct Contact	Arsenic	--	--	Vascular	--	--	--	--	--
			Barium	--	--		--	--	--	--	--
			Beryllium	--	--	Small intestine; Lungs	--	--	--	--	--
			Copper	--	--	Gastro-intestinal system	--	--	--	--	--
			Lead	--	--		--	--	--	--	--
			Zinc	--	--	Blood	--	--	--	--	--
			Benzoic Acid	--	--		--	--	--	--	--
			Bis(2-chloroethyl)ether[a]	--	--		--	--	--	--	--
			Bis(2-ethylhexyl)phthalate	--	--	Liver	--	--	--	--	--
			Acetone	3.9E+00	µg/L	Kidney	2.5E-03	1.2E-02	7.4E-06	--	1.5E-02
			Carbon tetrachloride	2.4E+00	µg/L	Liver	2.2E-01	1.3E+00	4.6E-02	--	1.6E+00
			Chloroform	9.2E-01	µg/L	Liver	5.9E-03	2.9E-02	4.0E-04	--	3.5E-02
			Tetrachloroethene	3.7E-01	µg/L	Liver	2.4E-03	1.2E-03	1.2E-03	--	4.8E-03
			Trichloroethene	1.3E+01	µg/L		1.4E-01	6.9E-01	1.8E-02	--	8.5E-01
			Xylenes	2.1E+00	µg/L	Decreased body weight	6.7E-05	3.4E-04	3.7E-05	--	4.4E-04
			TOTAL				**3.7E-01**	**2.0E+00**	**6.6E-02**	--	**2.E+00**

Receptor Hazard Index (soil [0-2 ft bgs] + groundwater) = 4.E+00
Receptor Hazard Index (soil [0-10 ft bgs] + groundwater) = 4.E+00

Table A3-5
Risk Characterization Summary - Non-Carcinogens
SA 035

Scenario Timeframe: **Future**
Receptor Population: **Outdoor Occupational**
Receptor Age: **Adult**

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Primary Target Organ	Non-Carcinogenic Hazard Quotient				
							Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	SA 035 - Soil On-site Direct Contact (0-2 ft bgs)	Arsenic	9.4E+00	mg/kg	Gastro-intestinal system	1.5E-02	6.8E-06	1.0E-02	--	2.5E-02
			Barium	2.0E+02	mg/kg	--	1.4E-03	3.0E-04	3.1E-04	--	2.0E-03
			Beryllium	5.0E-01	mg/kg	Blood	1.2E-04	1.9E-05	2.8E-05	--	1.7E-04
			Copper	2.5E+01	mg/kg	--	3.4E-04	1.5E-07	7.7E-05	--	4.2E-04
			Lead	5.0E+01	mg/kg	--	--	--	--	--	0.0E+00
			Zinc	5.5E+01	mg/kg	Liver	8.9E-05	4.0E-08	2.0E-05	--	1.1E-04
			Benzoic Acid	2.0E-01	mg/kg	Kidney	2.5E-08	6.2E-13	5.7E-08	--	8.2E-08
			Bis(2-chloroethyl)ether[a]	4.6E-01	mg/kg	--	5.7E-06	1.9E-10	1.3E-05	--	1.9E-05
			Bis(2-ethylhexyl)phthalate	1.5E-01	mg/kg	Liver	3.5E-06	8.1E-11	8.1E-06	--	1.2E-05
			Acetone	4.4E-01	mg/kg	Kidney	2.1E-06	6.0E-07	4.9E-06	--	7.6E-06
			TOTAL				**1.7E-02**	**3.3E-04**	**1.0E-02**	**--**	**3.E-02**

Scenario Timeframe: **Future**
Receptor Population: **Indoor Occupational**
Receptor Age: **Adult**

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Primary Target Organ	Non-Carcinogenic Hazard Quotient				
							Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	SA 035 - Soil On-site Direct Contact (0-2 ft bgs)	Acetone	4.4E-01	mg/kg	Kidney	--	1.9E-05	--	--	1.9E-05
			Bis(2-chloroethyl)ether[a]	0.19[b]	mg/kg	--	--	7.7E-06	--	--	7.7E-06
			TOTAL				**NA**	**2.7E-05**	**NA**	**NA**	**3.E-05**

Scenario Timeframe: **Future**
Receptor Population: **Construction Worker**
Receptor Age: **Adult**

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Primary Target Organ	Non-Carcinogenic Hazard Quotient				
							Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	SA 035 - Soil On-site Direct Contact (0-10 ft bgs)	Arsenic	5.6E+00	mg/kg	Gastro-intestinal system	8.8E-02	3.7E-03	2.5E-02	--	1.2E-01
			Barium	2.3E+02	mg/kg	--	1.5E-02	3.2E-01	1.5E-03	--	3.4E-01
			Beryllium	5.0E-01	mg/kg	Blood	1.2E-03	1.8E-02	1.2E-04	--	1.9E-02
			Copper	2.3E+01	mg/kg	--	3.0E-03	1.2E-04	2.8E-04	--	3.4E-03
			Lead	3.0E+01	mg/kg	--	--	--	--	--	0.0E+00
			Zinc	5.0E+01	mg/kg	Liver	7.8E-04	3.3E-05	7.4E-05	--	8.9E-04
			Benzoic Acid	1.3E-01	mg/kg	Kidney	1.6E-07	4.1E-13	1.5E-07	--	3.1E-07
			Bis(2-chloroethyl)ether[a]	1.3E-01	mg/kg	--	1.5E-05	5.4E-11	1.5E-05	--	3.0E-05
			Bis(2-ethylhexyl)phthalate	1.1E-01	mg/kg	Liver	2.7E-05	6.3E-11	2.5E-05	--	5.2E-05
			Acetone	4.4E-01	mg/kg	Kidney	2.1E-05	2.4E-16	2.0E-05	--	4.1E-05
			TOTAL				**1.1E-01**	**3.4E-01**	**2.7E-02**	**--**	**5.E-01**

Notes:
[a]In the OU A RICS Addendum risk assessment, bis(2-chloroethyl)ether was evaluated as a VOC and the vapor inhalation pathways (indoor and ambient air) were included in the risk calculations. In the Initial Parcel Feasibility Study (IP FS), bis(2-chloroethyl)ether was evaluated as a non-VOC and the vapor inhalation pathways (indoor and ambient air) were not included in the calculations. Exposure point concentrations and risk results for the indoor occupational scenario on this table are from the OU A RICS Addendum risk assessment (Jacobs 2002). Risk results for other scenarios are from the IP FS.
[b]See Table A3-1b for the origin of this indoor air occupational exposure point concentration.

SECTION A4

SA 091

The baseline human health risk assessment estimates what risks the site poses if no action were taken. It provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial actions. This section of the ROD summarizes the results of the baseline risk assessment for SA 091 as documented in Initial Parcel FS #1 (Appendix G). For groundwater, a screening-level assessment of potential risks was performed for the ROD. This evaluation was not included in the Initial Parcel FS #1. The most current data from monitoring well EW-301 were used in the groundwater assessment.

A4.1 Identification of Chemicals of Concern

Three potential COCs were identified for SA 091 in soil (DDD, DDE, and DDT). Table A4-1 presents the soil data summary for SA 091. The table includes the range of concentrations for COCs, as well as the frequency of detection (i.e., the number of times the chemical was detected in the samples collected at the site), the EPCs, and how the EPCs were derived for each of the soil depth intervals. In general, the lower value of the maximum concentration or the upper 95th percent confidence limit on the arithmetic mean was used as the EPC for COCs detected in more than one sample.

For groundwater, metals and VOCs were identified as COCs. Table A4-2 presents the groundwater data summary for monitoring well EW-301 and includes the detected concentrations of metals and VOCs.

A4.2 Exposure Assessment

A conceptual model was developed that describes the potential exposure pathways associated with soil and groundwater at SA 091 (see Figure 2-3 in Section 2.4 of the ROD). Although SA 091 will likely be used for commercial/industrial or mixed use purposes in the future, several exposure scenarios were evaluated in the human health risk assessment to provide information for future risk-management decisions.

The following exposure scenarios were quantitatively evaluated in the human health risk assessment:

- Exposure of hypothetical future residents (adults and children) to soil (0 to 2 feet bgs) and groundwater
- Exposure of hypothetical future residents (adults and children) to soil (0 to 10 feet bgs) and groundwater
- Exposure of commercial/industrial workers to soil (0 to 2 feet bgs)
- Exposure of construction workers to soil (0 to 15 feet bgs)

The exposure routes that were considered in the risk assessment include incidental soil ingestion, inhalation of resuspended particulates, and dermal contact with soil. For the residential scenarios, the ingestion of homegrown produce was included. For groundwater, the exposure routes included ingestion, dermal contact, and inhalation of VOCs.

A4.3 Toxicity Assessment

The toxicity data that were used in the human health risk assessment are summarized on Tables A4-2 and A4-3. Health effects are divided into two categories: cancer and non-cancer effects.

Table A4-2 presents the slope factors used to estimate potential excess lifetime cancer risks associated with exposure to soil and groundwater at SA 091. As shown on Table A4-2, the oral slope factor was used to estimate potential risks associated with dermal exposure. In addition, inhalation slope factors are not available for DDD and DDE so the oral slope factors were used to estimate potential risks associated with inhalation exposure. The slope factors were obtained from the EPA Integrated Risk Information System (IRIS) database and Cal-EPA.

Table A4-3 presents the RfDs used to evaluate the potential for non-cancer health effects. RfDs are not available for DDD and DDE, so RfDs for DDT were used as surrogates to evaluate the potential for adverse non-cancer health effects. The toxicity information indicates that the critical effect on which the RfD for DDT is based is the liver. As a pesticide, the primary toxic effects of DDT are on the nervous system. The oral RfD was used to estimate potential health effects associated with dermal exposure. In addition, an inhalation RfD is not available for DDT so the oral RfD was used to evaluate potential health effects from the inhalation exposure route. The reference doses shown on Table A4-3 were obtained from the IRIS database, HEAST, NCEA, and Cal-EPA (i.e., some of the inhalation RfDs were derived from chronic RELs from Cal-EPA.

A4.4 Risk Characterization

The EPA toxicity values described above were used in the human health risk assessment along with the exposure information to estimate the potential risks from contacting soil at SA 091. The risk characterization process and calculations are described in Appendix A, Section A.1.4.

Table A4-4 presents the potential cancer risk estimates for the various exposure scenarios and exposure routes at SA 091. These risk estimates are based on reasonable maximum exposure and were developed taking into account various conservative assumptions about the frequency and duration of the receptors to soil and the toxicity of the COCs.

Both residential and occupational exposure scenarios were evaluated for SA 091. The risk results for these scenarios are summarized below and presented in the risk summary tables at the end of this section.

The potential cancer risks for SA 091 based on soil exposure only are as follows:

- Future adult resident (0 to 2 feet bgs depth interval): 7×10^{-9}

- Future adult resident (0 to 10 feet bgs depth interval): 6×10^{-8}
- Outdoor occupational worker: 4×10^{-10}
- Future construction worker: 1×10^{-9}

The risk estimates for the residential scenarios and worker scenarios for soil exposure are below EPA's risk management range.

Table A4-5 presents the non-cancer hazard indexes for the various exposure scenarios and exposure routes at SA 091. The hazard indexes are less than one for the scenarios evaluated for soil exposure indicating that the potential for adverse non-cancer health effects is unlikely.

For the screening-level groundwater evaluation, the potential cancer risk for future adult residents is 2×10^{-4}. The main contributors to the potential cancer risk are arsenic and trichloroethylene. The noncancer hazard index for the future adult resident is 10 and the hazard index for the future child resident is 20. The main contributor to the hazard indexes is trichloroethylene.

A4.5 Uncertainties

The uncertainties associated with the risk estimates for SA 091 include:

- A screening-level evaluation of potential risks associated with exposure to groundwater was performed for SA 091. However, the groundwater underlying this site has likely been affected by an upgradient source (i.e., CS 24) and therefore, site-related risks specific to SA 091 associated with exposure to groundwater could not be evaluated.
- Current re-use plans for the site are indefinite, but do not include residential use. Hence, the use of the residential scenario for this site should be considered hypothetical at this time
- Only limited samples from the site were analyzed for SVOCs and metals. This may result in underestimating site risks.

Table A4-1
Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations
SA 091

Scenario Timeframe:	**Future**
Medium	**Soil**
Exposure Medium	**Soil**

Exposure Point	Chemical of Concern	Concentration Detected (mg/kg)		Frequency of Detection	95th UCL Concentration (mg/kg)	Statistical Measure[a]	Exposure Point Concentration[b] (mg/kg)
		Min	Max				
SA 091 - Soil On-site Direct Contact (0-2 ft bgs)	DDD	1.0E-03	1.0E-03	1/32	8.2E-04	95UCL Lognormal	8.2E-04
	DDE	3.0E-04	2.0E-03	5/32	8.9E-04	95UCL Lognormal	8.9E-04
	DDT	7.0E-04	9.8E-03	9/32	1.4E-03	95UCL Lognormal	1.4E-03
SA 091 - Soil On-site Direct Contact (0-10 ft bgs)	DDD	1.0E-03	1.0E-03	1/83	2.1E-03	Max Detect	1.0E-03
	DDE	3.0E-04	4.7E-01	9/83	1.6E-02	95UCL Normal	1.6E-02
	DDT	7.0E-04	3.4E-01	15/83	1.2E-02	95UCL Normal	1.2E-02

[a] The statistical measure indicates the basis for the exposure point concentration.

[b] The exposure point concentration is the lower value of the maximum concentration or the 95th UCL concentration.

Table A4-2
Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations
SA 091

Scenario Timeframe:	**Future**						
Medium	**Groundwater**						
Exposure Medium	**Groundwater**						
Exposure Point	**Chemical of Concern**	**Concentration Detected (µg/L) Min**	**Max**	**Frequency of Detection**	**95th UCL Concentration[a] (µg/L)**	**Statistical Measure[b]**	**Exposure Point Concentration[c] (µg/L)**
SA 091 - Groundwater On-site Direct Contact	Chloroform	2.1E-01	2.1E-01	1	--	Max Detect	2.1E-01
	1,1-Dichloroethane	1.1E+00	1.1E+00	1	--	Max Detect	1.1E+00
	1,2-Dichloroethane	1.8E-01	1.8E-01	1	--	Max Detect	1.8E-01
	1,1-Dichloroethene	2.4E+00	2.4E+00	1	--	Max Detect	2.4E+00
	cis-1,2-Dichloroethene	3.3E+00	3.3E+00	1	--	Max Detect	3.3E+00
	Trichloroethene	9.6E+01	9.6E+01	1	--	Max Detect	9.6E+01
	Arsenic	5.1E+00	5.1E+00	1	--	Max Detect	5.1E+00
	Barium	5.4E+01	5.4E+01	1	--	Max Detect	5.4E+01
	Chromium	1.1E+01	1.1E+01	1	--	Max Detect	1.1E+01
	Chromium, hexavalent	9.9E+00	9.9E+00	1	--	Max Detect	9.9E+00
	Iron	8.7E+01	8.7E+01	1			8.7E+01
	Nickel	1.6E+00	1.6E+00	1	--	Max Detect	1.6E+00
	Vanadium	2.8E+01	2.8E+01	1	--	Max Detect	2.8E+01

[a] Due to the limited data set, a statistical analysis could not be conducted to determine the 95th UCL concentration.
[b] The statistical measure indicates the basis for the exposure point concentration.
[c] The exposure point concentration is the lower value of the maximum concentration or the 95th UCL concentration.

95th UCL = 95 percent upper confidence limit on the mean.

Table A4-3
Cancer Toxicity Data Summary
SA 091

Pathway: Ingestion, Dermal						
Chemical of Concern	Oral Cancer Slope Factor	Dermal Cance Slope Factor	Slope Factor Units	Weight of Evidence[a]	Source	Date
DDD	0.24	0.24	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2003
DDE	0.34	0.34	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2003
DDT	0.34	0.34	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2003
Chloroform	0.031	0.031	$(mg/kg\text{-}day)^{-1}$	B2	Cal-EPA	2003
1,1-Dichloroethane	0.0057	0.0057	$(mg/kg\text{-}day)^{-1}$	C	Cal-EPA	2003
1,2-Dichloroethane	0.091	0.091	$(mg/kg\text{-}day)^{-1}$	B2	IRIA	2003
1,1-Dichloroethene						
cis -1,2-Dichloroethene						
Trichloroethene	0.013	0.013	$(mg/kg\text{-}day)^{-1}$		Cal-EPA	2003
Arsenic	1.5	1.5	$(mg/kg\text{-}day)^{-1}$	A	Cal-EPA	2003
Barium						
Chromium						
Chromium, hexavalent						
Iron						
Nickel						
Vanadium						

Pathway: Inhalation					
Chemical of Concern	InhalationCancer Slope Factor	Slope Factor Units	Weight of Evidence[a]	Source	Date
DDD	0.24	$(mg/kg\text{-}day)^{-1}$	B2	ROUTE	
DDE	0.34	$(mg/kg\text{-}day)^{-1}$	B2	ROUTE	
DDT	0.34	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2003
Chloroform	0.019	$(mg/kg\text{-}day)^{-1}$	B2	Cal-EPA	2003
1,1-Dichloroethane	0.0057	$(mg/kg\text{-}day)^{-1}$	C	Cal-EPA	2003
1,2-Dichloroethane	0.091	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2003
1,1-Dichloroethene					
cis -1,2-Dichloroethene					
Trichloroethene	0.007	$(mg/kg\text{-}day)^{-1}$		Cal-EPA	2003
Arsenic	15	$(mg/kg\text{-}day)^{-1}$	A	IRIS	2003
Barium					
Chromium					
Chromium, hexavalent	510	$(mg/kg\text{-}day)^{-1}$	A	Cal-EPA	2003
Iron					
Nickel	0.9	$(mg/kg\text{-}day)^{-1}$	D	Cal-EPA	2003
Vanadium					

[a]Weight of Evidence Classification

A - human carcinogen
B1 and B2 - probable human carcinogen
C - possible human carcinogen
D - not classifiable as a human carcinogen
E - evidence of noncarcinogenicity for humans
Reference = USEPA 1989. Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A). EPA/540/1-89/002. December.

Table A4-4
Non-Cancer Toxicity Data Summary
SA 091

Pathway: Ingestion, Dermal									
Chemical of Concern	Chronic/subchronic	Oral RfD	Oral RfD Units	Dermal RfD	Dermal RfD Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ
DDD	Chronic	0.0005	mg/kg-day	0.0005	mg/kg-day			SURROGATE	
DDE	Chronic	0.0005	mg/kg-day	0.0005	mg/kg-day			SURROGATE	
DDT	Chronic	0.0005	mg/kg-day	0.0005	mg/kg-day	Liver	100	IRIS	2003
Chloroform	Chronic	0.01	mg/kg-day	0.01	mg/kg-day	Liver	1000	IRIS	2003
1,1-Dichloroethane	Chronic	0.1	mg/kg-day	0.1	mg/kg-day	Kidney	1000	HEAST	1997
1,2-Dichloroethane	Chronic	0.03	mg/kg-day	0.03	mg/kg-day			NCEA	2002
1,1-Dichloroethene	Chronic	0.05	mg/kg-day	0.05	mg/kg-day	Liver	100	IRIS	2003
cis -1,2-Dichloroethene	Chronic	0.01	mg/kg-day	0.01	mg/kg-day	Blood-forming system	3000	HEAST	1997
Trichloroethene	Chronic	0.0003	mg/kg-day	0.0003	mg/kg-day	Nervous system		NCEA	2002
Arsenic	Chronic	0.0003	mg/kg-day	0.0003	mg/kg-day	Skin	3	IRIS	2003
Barium	Chronic	0.07	mg/kg-day	0.07	mg/kg-day	Kidney	3	IRIS	2003
Chromium	Chronic	1.5	mg/kg-day	1.5	mg/kg-day	None reported	100	IRIS	2003
Chromium, hexavalent	Chronic	0.003	mg/kg-day	0.003	mg/kg-day	None reported	900	IRIS	2003
Iron	Chronic	0.3	mg/kg-day	0.3	mg/kg-day			NCEA	2002
Nickel	Chronic	0.02	mg/kg-day	0.02	mg/kg-day	Decreased weight	300	IRIS	2003
Vanadium	Chronic	0.007	mg/kg-day	0.007	mg/kg-day	Liver and kidney	100	IRIS	2003

Pathway: Inhalation							
Chemical of Concern	Chronic/subchronic	Inhalation RfD	Oral RfD Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ
DDD	Chronic	0.0005	mg/kg-day			SURROGATE	
DDE	Chronic	0.0005	mg/kg-day			SURROGATE	
DDT	Chronic	0.0005	mg/kg-day			ROUTE	
Chloroform	Chronic	0.086	mg/kg-day	Alimentary system		REL	2003
1,1-Dichloroethane	Chronic	0.14	mg/kg-day	Kidney		HEAST	1997
1,2-Dichloroethane	Chronic	0.11	mg/kg-day	Alimentary system		REL	2003
1,1-Dichloroethene	Chronic	0.02	mg/kg-day	Alimentary system		REL	2003
cis -1,2-Dichloroethene	Chronic	0.01	mg/kg-day			ROUTE	
Trichloroethene	Chronic	0.17	mg/kg-day	Nervous system		REL	2003
Arsenic	Chronic	8.6E-06	mg/kg-day	Cardiovascular system		REL	2003
Barium	Chronic	1.4E-04	mg/kg-day			HEAST	1997
Chromium	Chronic	1.5	mg/kg-day			ROUTE	
Chromium, hexavalent	Chronic	2.2E-06	mg/kg-day	Nasal septum	90	IRIS	2003
Iron			mg/kg-day				
Nickel	Chronic	1.4E-05	mg/kg-day	Respiratory system		REL	2003
Vanadium	Chronic	0.007	mg/kg-day			ROUTE	

Notes:
Toxicity values used were accurate as of the date of report submittal and are not necessarily the most current values.
Blank cells indicate information is not available or not applicable.

Cal-EPA = California Environmental Protection Agency
HEAST = Health Effects Assessment Summary Table
IRIS = Integrated Risk Information System
NCEA = Nationa Center for Environmental Assessment, USEPA
REL = RfD derived from reference exposure level from Cal-EPA
ROUTE = route-to-route extrapolated value (e.g., oral RfD used for inhalation RfD)
SURROGATE = RfDs for DDT used for DDD and DDE

Table A4-5
Risk Characterization Summary - Carcinogens
SA 091

Scenario Timeframe: **Future**
Receptor Population: **Resident**
Receptor Age: **Adult**

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Carcinogenic Risk				
						Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	SA 091 - Soil On-site Direct Contact (0-2 ft bgs)	DDD	8.2E-04	mg/kg	3.E-10	2.E-15	5.E-11	1.E-09	2.E-09
			DDE	8.9E-04	mg/kg	5.E-10	3.E-15	8.E-11	1.E-09	2.E-09
			DDT	1.4E-03	mg/kg	8.E-10	5.E-15	1.E-10	2.E-09	3.E-09
			TOTAL			2.E-09	9.E-15	2.E-10	5.E-09	7.E-09
		SA 091 - Soil On-site Direct Contact (0-10 ft bgs)	DDD	1.0E-03	mg/kg	4.E-10	2.E-15	6.E-11	2.E-09	2.E-09
			DDE	1.6E-02	mg/kg	8.E-09	5.E-14	1.E-09	2.E-08	3.E-08
			DDT	1.2E-02	mg/kg	7.E-09	4.E-14	1.E-09	2.E-08	3.E-08
			TOTAL			2.E-08	9.E-14	3.E-09	4.E-08	6.E-08
Groundwater	Groundwater	SA 091- Groundwater On-Site Direct Contact	Chloroform	2.1E-01	ug/L	1.E-07	3.E-07	6.E-09	--	4.E-07
			1,1-Dichloroethane	1.1E+00	ug/L	9.E-08	5.E-07	5.E-09	--	5.E-07
			1,2-Dichloroethane	1.8E-01	ug/L	2.E-07	1.E-06	8.E-09	--	1.E-06
			1,1-Dichloroethene	2.4E+00	ug/L	--	--	--	--	--
			cis -1,2-Dichloroethene	3.3E+00	ug/L	--	--	--	--	--
			Trichloroethene	9.6E+01	ug/L	2.E-05	5.E-05	2.E-06	--	7.E-05
			Arsenic	5.1E+00	ug/L	1.E-04	--	3.E-07	--	1.E-04
			Barium	5.4E+01	ug/L	--	--	--	--	--
			Chromium	1.1E+01	ug/L	--	--	--	--	--
			Chromium, hexavalent	9.9E+00	ug/L	6.E-05	--	3.E-07	--	6.E-05
			Iron	8.7E+01	ug/L	--	--	--	--	--
			Nickel	1.6E+00	ug/L	--	--	--	--	--
			Vanadium	2.8E+01	ug/L	--	--	--		--
			TOTAL			**2.E-04**	**5.E-05**	**3.E-06**	--	**2.E-04**

TOTAL (soil [0-2 ft bgs] + groundwater) = 2.E-04

TOTAL (soil [0-10 ft bgs] + groundwater) = 2.E-04

Scenario Timeframe: **Future**
Receptor Population: **Outdoor Occupational**
Receptor Age: **Adult**

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Carcinogenic Risk				
						Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	SA 091 - Soil On-site Direct Contact (0-2 ft bgs)	DDD	8.2E-04	mg/kg	3.E-11	9.E-16	4.E-11	--	7.E-11
			DDE	8.9E-04	mg/kg	5.E-11	1.E-15	6.E-11	--	1.E-10
			DDT	1.4E-03	mg/kg	9.E-11	2.E-15	1.E-10	--	2.E-10
			TOTAL			**2.E-10**	**4.E-15**	**2.E-10**	**--**	**4.E-10**

Scenario Timeframe: **Future**
Receptor Population: **Construction Worker**
Receptor Age: **Adult**

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Carcinogenic Risk				
						Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	SA 091 - Soil On-site Direct Contact (0-15 ft bgs)	DDD	1.0E-03	mg/kg	2.E-11	4.E-17	8.E-12	--	2.E-11
			DDE	1.6E-02	mg/kg	4.E-10	9.E-16	2.E-10	--	5.E-10
			DDT	1.2E-02	mg/kg	3.E-10	7.E-16	1.E-10	--	4.E-10
			TOTAL			**7.E-10**	**2.E-15**	**3.E-10**	--	**1.E-09**

Table A4-6
Risk Characterization Summary - Non-Carcinogens
SA 091

Scenario Timeframe: **Future**
Receptor Population: **Resident**
Receptor Age: **Adult**

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Primary Target Organ	Non-Carcinogenic Hazard Quotient				
							Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	SA 091 - Soil On-site Direct Contact (0-2 ft bgs)	DDD	8.2E-04	mg/kg		2.E-06	3.E-11	5.E-07	2.E-05	2.E-05
			DDE	8.9E-04	mg/kg		2.E-06	3.E-11	5.E-07	1.E-05	2.E-05
			DDT	1.4E-03	mg/kg	Liver	4.E-06	5.E-11	8.E-07	5.E-06	9.E-06
			TOTAL				9.E-06	1.E-10	2.E-06	5.E-05	6.E-05
		SA 091 - Soil On-site Direct Contact (0-10 ft bgs)	DDD	1.0E-03	mg/kg		3.E-06	3.E-11	6.E-07	2.E-05	3.E-05
			DDE	1.6E-02	mg/kg		4.E-05	5.E-10	9.E-06	2.E-04	3.E-04
			DDT	1.2E-02	mg/kg	Liver	3.E-05	4.E-10	7.E-06	2.E-04	2.E-04
			TOTAL				**8.E-05**	**1.E-09**	**2.E-05**	**4.E-04**	**5.E-04**
Groundwater	Groundwater	SA 091 - Groundwater On-Site Direct Contact	Chloroform	2.1E-01	ug/L	Liver	6.E-04	3.E-04	4.E-05	--	1.E-03
			1,1-Dichloroethane	1.1E+00	ug/L	Kidney	3.E-04	1.E-03	2.E-05	--	1.E-03
			1,2-Dichloroethane	1.8E-01	ug/L		2.E-04	2.E-04	6.E-06	--	4.E-04
			1,1-Dichloroethene	2.4E+00	ug/L	Liver	1.E-03	2.E-02	2.E-04	--	2.E-02
			cis-1,2-Dichloroethene	3.3E+00	ug/L	Blood-forming system	9.E-03	5.E-02	9.E-04	--	5.E-02
			Trichloroethene	9.6E+01	ug/L	Nervous system	9.E+00	8.E-02	1.E+00	--	1.E+01
			Arsenic	5.1E+00	ug/L	Skin	5.E-01	--	1.E-03	--	5.E-01
			Barium	5.4E+01	ug/L	Kidney	2.E-02	--	6.E-05	--	2.E-02
			Chromium	1.1E+01	ug/L	None reported	2.E-04	--	6.E-07	--	2.E-04
			Chromium, hexavalent	9.9E+00	ug/L	None reported	9.E-02	--	5.E-04	--	9.E-02
			Iron	8.7E+01	ug/L		8.E-03	--	2.E-05	--	8.E-03
			Nickel	1.6E+00	ug/L	Decreased weight	2.E-03	--	1.E-06	--	2.E-03
			Vanadium	2.8E+01	ug/L	Liver and kidney	1.E-01	--	3.E-04	--	1.E-01
			TOTAL				**1.E+01**	**1.E-01**	**1.E+00**	--	**1.E+01**

TOTAL (soil [0-2 ft bgs] + groundwater) = 1.E+01
TOTAL (soil [0-10 ft bgs] + groundwater) = 1.E+01

Scenario Timeframe: **Future**
Receptor Population: **Resident**
Receptor Age: **Child**

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Primary Target Organ	Non-Carcinogenic Hazard Quotient				
							Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	SA 091 - Soil On-site Direct Contact (0-2 ft bgs)	DDD	8.2E-04	mg/kg		2.E-05	7.E-11	3.E-06	5.E-05	8.E-05
			DDE	8.9E-04	mg/kg		2.E-05	7.E-11	3.E-06	4.E-05	6.E-05
			DDT	1.4E-03	mg/kg	Liver	4.E-05	1.E-10	5.E-06	6.E-05	1.E-04
			TOTAL				**8.E-05**	**3.E-10**	**1.E-05**	**1.E-04**	**2.E-04**
		SA 091 - Soil On-site Direct Contact (0-10 ft bgs)	DDD	1.0E-03	mg/kg		3.E-05	8.E-11	4.E-06	6.E-05	9.E-05
			DDE	1.6E-02	mg/kg		4.E-04	1.E-09	6.E-05	6.E-04	1.E-03
			DDT	1.2E-02	mg/kg	Liver	3.E-04	1.E-09	5.E-05	5.E-04	9.E-04
			TOTAL				**7.E-04**	**2.E-09**	**1.E-04**	**1.E-03**	**2.E-03**
Groundwater	Groundwater	SA 091 - Groundwater On-Site Direct Contact	Chloroform	2.1E-01	ug/L	Liver	1.E-03	8.E-04	7.E-05	--	2.E-03
			1,1-Dichloroethane	1.1E+00	ug/L	Kidney	7.E-04	2.E-03	3.E-05	--	3.E-03
			1,2-Dichloroethane	1.8E-01	ug/L		4.E-04	5.E-04	1.E-05	--	9.E-04
			1,1-Dichloroethene	2.4E+00	ug/L	Liver	3.E-03	4.E-02	2.E-04	--	4.E-02
			cis-1,2-Dichloroethene	3.3E+00	ug/L	Blood-forming system	2.E-02	1.E-01	1.E-03	--	1.E-01
			Trichloroethene	9.6E+01	ug/L	Nervous system	2.E+01	2.E-01	2.E+00	--	2.E+01
			Arsenic	5.1E+00	ug/L	Skin	1.E+00	--	2.E-03	--	1.E+00
			Barium	5.4E+01	ug/L	Kidney	5.E-02	--	1.E-04	--	5.E-02
			Chromium	1.1E+01	ug/L	None reported	5.E-04	--	9.E-07	--	5.E-04
			Chromium, hexavalent	9.9E+00	ug/L	None reported	2.E-01	--	8.E-04	--	2.E-01
			Iron	8.7E+01	ug/L		2.E-02	--	4.E-05	--	2.E-02
			Nickel	1.6E+00	ug/L	Decreased weight	5.E-03	--	2.E-06	--	5.E-03
			Vanadium	2.8E+01	ug/L	Liver and kidney	3.E-01	--	5.E-04	--	3.E-01
			TOTAL				**2.E+01**	**3.E-01**	**2.E+00**	--	**2.E+01**

TOTAL (soil [0-2 ft bgs] + groundwater) = 2.E+01
TOTAL (soil [0-10 ft bgs] + groundwater) = 2.E+01

Scenario Timeframe: **Future**
Receptor Population: **Outdoor Occupational**
Receptor Age: **Adult**

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Primary Target Organ	Non-Carcinogenic Hazard Quotient				
							Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	SA 091 - Soil On-site Direct Contact (0-2 ft bgs)	DDD	8.2E-04	mg/kg		8.E-07	2.E-11	9.E-07	--	2.E-06
			DDE	8.9E-04	mg/kg		9.E-07	2.E-11	1.E-06	--	2.E-06
			DDT	1.4E-03	mg/kg	Liver	1.E-06	4.E-11	2.E-06	--	3.E-06
			TOTAL				**3.E-06**	**8.E-11**	**4.E-06**	--	**7.E-06**

Scenario Timeframe: **Future**
Receptor Population: **Construction Worker**
Receptor Age: **Adult**

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Primary Target Organ	Non-Carcinogenic Hazard Quotient				
							Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	SA 091 - Soil On-site Direct Contact (0-10 ft bgs)	DDD	1.0E-03	mg/kg		9.E-06	2.E-11	5.E-06	--	1.E-05
			DDE	1.6E-02	mg/kg		2.E-04	4.E-10	7.E-05	--	2.E-04
			DDT	1.2E-02	mg/kg	Liver	1.E-04	3.E-10	6.E-05	--	2.E-04
			TOTAL				**3.E-04**	**7.E-10**	**1.E-04**	--	**4.E-04**

Appendix B
PRL S-040 Decision Summary

APPENDIX B

PRL S-040 Decision Summary

B1.1 Site Name, Location, and Description

PRL S-040 is located in the northern portion of OU H and covers approximately 8 acres. PRL S-040 is the former location of an aircraft maintenance and engine test area. The site is the current location of the Base Commissary (Building 910) and commissary storage warehouse (Building 911).

B1.2 Site History and Enforcement Activities

B1.2.1 Site History

PRL S-40 consists of a former aircraft maintenance and engine test area (Maintenance Apron Terminal [MAT] B) where aircraft were stored and maintained and engines were tested between 1946 and 1968. The exact location of the engine test stand is unknown (PA, 1995). PRL S-040 is bordered by James Way and PRL P-007 (a drainage ditch) to the north, AOC H-13 (former automobile hobby shop) to the east, AOC H-8 (former POL storage facility) to the south, and PRL B-7 (former spoil area) to the southwest. Fuel tanks, fuel lines, and oil/water separators were also located at the site during the period of operation, but were removed by 1971. An abandoned portion of the industrial wastewater line (IWL) is located in the southern portion of the site. Buildings 910 (base commissary) and 912 (commissary storage warehouse) were constructed at the site in 1984 and 1987, respectively.

The site currently serves as a portion of the parking lot for customers of the base exchange and commissary. An area, approximately 100 feet north of the site, provides dormitory housing for employees of McClellan Park tenants who require temporary housing while attending training sessions onbase. No parcels adjacent to this site are used for residential or other "sensitive" uses (i.e., day-cares, schools, or hospitals).

B1.2.2 Previous Investigations

- Site Investigations in 1985 (OUs E-H Preliminary Assessment, McClellan, 1995).
- Site Investigation in 1990 (McClellan Environmental Management (EM) Memorandum, 1990).
- Remedial Investigation in 2000 (OUs E-H RICS 2, Jacobs, 2000).

B1.3 Community Participation

Details of the community relations/public participation program are provided in Section 2.2 of the ROD.

B1.4 Scope and Role of Operable Unit or Response Action

Section 2.3.1 of the ROD describes the overall site cleanup strategy for the Base, and potential future response plans for PRL S-040 are included in Section 2.3.4 of the ROD.

Soil at site PRL S-040 is only contaminated with fuel-related compounds and is proposed for no action under CERCLA. However, the fuel contamination will be handled under State requirements.

B1.5 Site Characteristics

B1.5.1 Source of Contamination

Potential release locations included an aircraft engine test stand, aboveground fuel tanks and lines, oil/water separators, and the abandoned portion of the IWL. Potential contaminants identified in the RICS were metals, TPH, PCBs, SVOCs, and VOCs, most of which likely resulted from the distribution or use of fuels at the site.

Key information regarding characterization of the site that was used to prepare this summary is provided in the following list of documents that are listed in chronological order:

Jacobs. 2000a. *Operable Units E-H: Remedial Investigation Characterization Summaries 2*. Final. June.

Text: Vol. 2, PRL S-40, pgs. 1-18
Hits Table: Vol. 2, PRL S-40, Attachment 1, pgs. 1-12
All Data: Vol. 4, Appendix A, PRLS40, pgs. 29-59, 73-111
Human Health Risk Assessment Data: Vol. 6, Appendix C1, Section 9.18 pgs. 9-73 to 9-77, Tables 9.18.9 to 9.18.15

McClellan. 1995. *Final Operable Units E through H Preliminary Assessment Report*. Final. January. pgs. 3-6, 3-12, 3-13, PRL 1 through 12,

B1.5.2 Sampling Strategy and Type of Contamination

During the pre-RI and RI investigations, soil and groundwater samples were collected from 20 excavation locations and 35 soil borings from 1985 to 2000. Samples were analyzed for PCBs, SVOCs, VOCs, metals, TPH, and pesticides. Samples were collected mainly in the northern portion of PRL S-040 where contamination was suspected.

In 1985, prior to the RI, two investigations were performed to characterize contamination at the site. In the first effort, eight soil samples were collected from one excavation and analyzed for PCBs, SVOCs, VOCs, TPH, and pesticides. Only TPH-D was detected. In the second effort, an additional 54 soil samples were collected from 19 excavations and analyzed for TPH. Again, TPH-D was detected. A third investigation was performed in 1990. Sixty-three soil samples were obtained from 23 borings. However, sampling locations and analytical results were not well documented.

As a part of the RI investigation, 24 soil borings were drilled and sampled for TPH, SVOCs, and metals. TPH-G and TPH-D were detected; 11 SVOCs were detected above detection limits; and, 15 metals were detected at least once above background levels.

Location of Contamination

The following sections describe the lateral and vertical extent of contamination at PRL S-040. SVOCs, PCBs, metals, TPH, and fuel-related VOCs were the primary contaminants. Figure B1-1 identifies the site location and significant site features. Figure B1-2 provides the data from the remedial investigation sampling.

PCBs and SVOCs

PCBs were not detected in any of the 25 samples that were collected for PCB analysis.

SVOCs were analyzed in soil samples collected from 24 borings. Three contaminants, 2,6-dinitrotoluene (a single detection at 0.63 mg/kg at 6.25 feet in boring PS40SB005), naphthalene, and 2-methylnaphthalene were detected at concentrations above the screening level for protection of human health. 2,6-dinitrotoluene was not detected in the 2-foot bgs sample, and no SVOCs were detected in the 9.5-foot bgs sample. Elevated levels of TPH-D were reported in the same samples as had detections of the three SVOCs. The naphthalene and 2-methylnaphthalene contamination is likely due to the distribution and use of fuels at the site.

Eight other SVOCs were detected at the maximum concentration indicated below, but at concentrations less than the chemical-specific screening levels for the protection of human health, surface water, and groundwater:

- DEHP (bis (2-ethylhexyl)phthalate at 0.44 mg/kg
- DEPH (diethylphthalate) at 0.034 mg/kg
- Benz(a)anthracene at 0.021 mg/kg
- Fluorene at 1.3 mg/kg
- NNSPH (N-nitrosodiphenylamine) at 0.026 mg/kg
- Phenanthrene at 0.96 mg/kg
- DNBP (di-n-butylphthalate) at 0.89 mg/kg
- Di-n-octyl phthalate at 0.049 mg/kg

Metals

Based on the OUs E-H RICS2, 15 metals, including arsenic and iron, were detected at concentrations above their respective background values (for silts and clays and sand). However, a statistical analysis indicated that only six metals (copper, lead, vanadium, zinc, potassium and sodium) were present at concentrations greater than would be considered normal variance of background. Potassium and sodium are considered essential minerals and not associated with any source of contamination. In addition, none of the reported concentrations of lead or zinc exceeded the respective "combined" background concentrations.

The maximum concentrations of copper, lead, vanadium, and zinc (all detected in PS40SB013 at 2 feet bgs) were less than all screening levels for the protection of human health, surface water, and groundwater. With the exception of copper, the reported

concentrations were less than the maximum concentrations of the background data set (Basewide Background Study, Radian, 1994). In addition, no metals were reported above background concentrations at 5.75 and 10 feet bgs in the same boring.

Other than PS40SB013, the only other coincident elevated copper and vanadium concentrations were reported in PS40SB12 at 5.25 feet bgs and in PS40SB15 at 5 feet bgs. PS40SB12 was located approximately 70 feet east of PS40SB013, and PS40SB15 was located approximately 130 feet southwest of PS40SB013. No metals were reported above background in samples from the same borings collected at 2.5 and 9 feet bgs. The other elevated concentrations of copper and vanadium were sporadic. In each case, other samples from the same borings had concentrations of the two metals at less then the "combined" background concentrations.

The maximum reported concentrations of arsenic, iron, and manganese exceeded the screening levels for the protection of human health, and arsenic exceeded the screening level for the protection of groundwater. Arsenic and iron concentrations also exceeded their respective "combined" background concentrations, but manganese concentrations did not. However, as indicated in the RICS, the concentrations of arsenic, iron, and manganese are considered within normal variance of background based on the statistical analysis (Jacobs, 2000a).

TPH-D

TPH-D was detected in 27 samples from 24 borings at PRL S-040 from 8.4 mg/kg to 11,000 mg/kg. The highest concentration was reported at boring PS40SB005 at a depth of 6.25 feet bgs. At 2 feet bgs, TPH-D was reported at 4,200 mg/kg and non-detect at 9.75 feet bgs in the same boring. Other borings where TPH-D was detected included PS40SB001, PS40SB007, PS40SB008, PS40SB0017, PS40SB021, and PS40SB023. There were no detections of TPH-D above 100 mg/kg below 11 feet bgs. The only detection below 11 feet bgs (i.e., 20 feet) was 10 mg/kg at boring PS40SB022. TPH-D is a significant contaminant at PRL S-040 and is likely limited to the upper 15 feet across the site.

Data collected from an EM investigation in 1985 were also used to define the extent of TPH contamination. Fifty-four samples were collected from 19 excavations. Samples were collected between 1 and 5 feet bgs and analyzed for TPH-D. Concentrations of TPH-D exceeded 1,000 mg/kg in 14 of the 54 samples. Seven of the samples had reported TPH concentrations between 10,000 and 30,000 mg/kg.

TPH-G

TPH-G was detected in 15 RI samples from 24 borings ranging from 0.17 mg/kg to 1,600 mg/kg. The highest detection was reported in the same sample with the highest TPH-D concentration (boring PS40SB005 at a depth of 6.25 feet bgs). At 2 feet bgs, TPH-G was reported at 360 mg/kg and 16 mg/kg at 9.75 feet bgs. Other borings where TPH-G was detected included PS40SB001, PS40SB007, PS40SB008, and PS40SB0017. TPH-G is determined to be a significant contaminant at PRL S-040 and is likely limited to the upper 15 feet across the site.

VOCs

VOCs were reported in samples from 8 of 19 borings sampled for soil gas. Benzene, ethylbenzene, hexane, xylene, and Freon were reported above detection limits. The reported VOCs are fuel related constituents with the exception of Freon. Freon was reported above detection limits in only one boring at depths from 20 to 60 feet bgs. No other contaminants (e.g., VOCs or fuels) were detected in the samples with detections of Freon. There is no known source of the Freon contamination.

Fuel-related VOCs and TCE were also detected in groundwater samples at concentrations below their respective maximum contaminant levels (MCLs), and TPH-D exceeded the taste and odor threshold. The TCE contamination in groundwater is likely from source upgradient of PRL S-040. Predictive modeling concluded that VOCs in the vadose zone will not impact groundwater above MCLs. VOC contamination at PRL S-040 will be addressed in the VOC FS Addendum and VOC ROD.

B1.5.3 Contamination Exposure and Migration

Potential future exposure of residents or workers to contaminated soil is the most significant exposure pathway. Potential exposure may also occur when shallow soils are brought to the surface by excavation, drilling, or construction.

The likelihood of migration to other media is high. Based on modeling results and analytical data reviewed during the Initial Parcel FS #1 evaluation, TPH-D and TPH-G present a potential threat to groundwater and surface water.

B1.6 Current and Potential Future Site and Resource Uses

The predominant current land uses at McClellan include industrial, aviation, and residential. There are also some open areas present that are not currently used for any of these purposes. Currently, the Base commissary and commissary storage warehouse are partially located within PRL S-040.

In the future, the remaining portions of PRL S-040 will likely be used for commercial/ industrial or mixed use purposes. Various scenarios were evaluated in the human health risk assessment, including the residential scenarios, to provide information to evaluate the range of potential uses for the site and to make future risk-management decisions.

B1.7 Human Health Risk Assessment

The baseline human health risk assessment estimates what risks the site poses if no action were taken. It provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial actions. This section of the ROD summarizes the results of the baseline risk assessment for PRL S-040.

B1.7.1 Identification of Chemicals of Concern

Four metals and 21 organic chemicals were identified as potential COCs for PRL S-040. Tables B-1a through B-1d present the soil data summary (0 to 2 feet bgs and 0 to 10 feet bgs depth intervals), air concentration data summary and groundwater data summary, for PRL

S-040, respectively (tables are located at the end of this appendix). The tables for soil and groundwater include the range of concentrations for COCs, as well as the frequency of detection (i.e., the number of times the chemical was detected in the samples collected at the site), the EPCs, and how the EPCs were derived. In general, the lower value of the maximum concentration or the upper 95th percent confidence limit on the arithmetic mean was used as the EPC for COCs detected in more than one sample. The EPCs for air were modeled from soil concentrations; both soil and modeled air concentrations are shown on Table B-1b.

B1.7.2 Exposure Assessment

A conceptual model was developed that describes the potential exposure pathways associated with soil and groundwater at PRL S-040 (see Figure 2-3 in Section 2.4 of the ROD). The exposure area is limited to two acres of the northern portion of the site. Although PRL S-040 will likely be used for commercial/industrial or mixed use purposes in the future, several exposure scenarios were evaluated in the human health risk assessment to provide information for future risk-management decisions.

The following exposure scenarios were quantitatively evaluated in the human health risk assessment:

- Exposure of hypothetical future residents (adults and children) to soil (0 to 2 feet bgs)
- Exposure of hypothetical future residents (adults and children) to soil (0 to 10 feet bgs)
- Exposure of hypothetical future residents (adults and children) to groundwater
- Exposure of outdoor workers to soil (0 to 2 feet bgs)
- Exposure of construction workers to soil (0 to 15 feet bgs)
- Exposure of indoor workers to air

The exposure routes that were considered in the risk assessment include incidental soil ingestion, inhalation of VOCs (indoor air for residents and ambient air for outdoor workers and construction workers) and resuspended particulates, and dermal contact with soil. For the residential scenarios, the ingestion of homegrown produce was included. For groundwater, the ingestion, inhalation of VOCs, and dermal contact exposure routes were considered. For the indoor worker, potential risk associated with inhalation of VOCs in indoor air was evaluated.

B1.7.3 Toxicity Assessment

The toxicity data that were used in the human health risk assessment are summarized on Tables B-4 and B-5. Health effects are divided into two categories: cancer and non-cancer effects. Although significant concentrations of fuel products are present, the risk assessment does not include the TPH data, as there are no definitive means of assessing toxicity from exposure to fuel.

Table B-4 presents the slope factors used to estimate potential excess lifetime cancer risks associated with exposure to soil at PRL S-040. As shown on Table B-4, the oral slope factor was used to estimate potential risks associated with dermal exposure. These slope factors were obtained from Cal-EPA Cancer Potency Factors (2000) and EPA National Center for Environmental Assessment.

Table B-5 presents the RfDs used to evaluate the potential for non-cancer health effects. The oral RfD was used to estimate potential health effects associated with dermal exposure. The

reference doses shown on Table B-5 were obtained from various sources as noted on the table. For some of the COCs, inhalation RfDs are not available so oral RfDs were used to evaluate the inhalation exposure route.

B1.7.4 Risk Characterization

The California and EPA toxicity values described above were used in the human health risk assessment along with the exposure information to estimate the potential risks from contacting soil and groundwater at PRL S-040. The risk characterization process and calculations are described in Appendix A, Section A.1.4.

Both residential and occupational exposure scenarios were evaluated for PRL S-040. The risk results for the residential and occupational scenarios are presented in the text below. However, the risk summary tables only present the results for the residential scenario. Because there are a large number of chemicals evaluated for PRL S-040 and risks for the occupational scenarios were below USEPA's risk management range, only the residential results are presented in the risk summary tables for PRL S-040. This approach is consistent with USEPA ROD guidance that states the primary focus of the risk assessment summary should be on those exposure pathways found to pose actual or potential threats to human health.

The potential cumulative cancer risks (soil and groundwater risks) for PRL S-040 are as follows:

- Future adult resident (0 to 2 feet bgs depth interval of soil plus groundwater): 5×10^{-6}
- Future adult resident (0 to 10 feet bgs depth interval of soil plus groundwater): 5×10^{-6}
- Future adult resident (0 to 2 feet bgs depth interval): 3×10^{-7}
- Future adult resident (0 to 10 feet bgs depth interval): 3×10^{-7}

- Outdoor occupational worker: 2×10^{-8}
- Indoor occupational worker: 3×10^{-9}
- Future construction worker: 4×10^{-10}

The risk estimates for the residential scenarios are within EPA's risk management range. The risk estimates for the worker scenarios are below EPA's risk management range. For the residential scenarios, benzene is the primary contributor to the estimated risks, and presumed household uses of groundwater are the primary contributing pathways. However, benzo(a)anthracene was the primary contributor to soil risk.

The potential noncancer risks for PRL S-040 are as follows:

- Future adult resident (0 to 2 feet bgs depth interval) and groundwater: 2
- Future adult resident (0 to 10 feet bgs depth interval) and groundwater: 2

- Future child resident (0 to 2 feet bgs depth interval) and groundwater: 2
- Future child resident (0-10 feet bgs depth interval) and groundwater: 1

- Indoor Occupation worker: <1
- Outdoor Occupational worker: <1
- Future Construction worker: <1

The main COCs that contribute to the hazard indexes greater than one are naphthalene and 1,2,4-trimethylbenzene, and presumed household uses of groundwater are the primary contributing pathways.

Table B-6 presents the potential cancer risk estimates for the residential exposure scenarios at PRL S-040. The risk estimates for groundwater have been revised from the RICS2 for Operable Units E-H (Jacobs, 2000) based on comments from the Human and Ecological Risk Division (HERD) of the Department of Toxic Substances Control. In the RICS, benzo(a)anthracene was incorrectly included as a groundwater contaminant and the wrong concentration for benzene was used.

Table B-7 presents the non-cancer hazard indexes for the residential exposure scenarios at PRL S-040. These risk estimates are based on reasonable maximum exposure and were developed taking into account various conservative assumptions about the frequency and duration of the receptors to soil and groundwater and the toxicity of the COCs.

Based on the risk assessment, the potential cancer risk from groundwater exposure for future adult residents is 5.0×10^{-6}. The main contributor to the potential cancer risk is benzene. For groundwater, the noncancer hazard index for the future adult resident is 2.0 and the hazard index for the future child resident is 1.0. The main contributors to the hazard indices are benzene, naphthalene, 1,2,4 trimethylbenzene, and 1,3,5 trimethylbenzene.

B1.7.5 Uncertainties

There are uncertainties associated with the risk estimates for PRL S-040. The main uncertainties are as follows:

- EPCs for groundwater are based on the maximum reported concentrations from two samples collected in the A-zone. The productive yield of the A-zone is insufficient to support a typical well for domestic use, so the risk estimates for presumed household uses of groundwater based on these maximum concentrations are most likely overestimated.
- The indoor air exposure pathway was not evaluated for naphthalene and 2-methyl naphthalene in the human health risk assessment. A comparison of the EPCs for these two constituents to the risk-based screening levels that include the indoor air pathway result in estimated HQs of 3 for naphthalene and 6 for 2-methyl naphthalene. These results indicate noncancer hazards are underestimated by not including the indoor air pathway for these two constituents.
- Cyclohexane was not included as a COC in the noncancer hazard indices; however, it was detected in one boring at 13,000 ppbv at 9.7 feet bgs. Hazard quotients were estimated for cyclohexane for the inhalation pathway and are as follows:
  - Residential child: 0.000006
  - Residential adult: 0.000002
  - Outdoor occupational: 0.00000005
  - Indoor occupational: 0.0000004
  - Construction worker: 0.000001

Based on these results, it is not likely that risks are underestimated significantly by not including cyclohexane as a COC.

- Toxicity criteria for some of the VOCs have changed since the human health risk assessment was conducted. VOC risk estimates may increase or decrease by more than an order of magnitude when the VOC risk assessment is updated with the most current toxicity criteria. At this time, the current toxicity values for the following chemicals for PRL S-040 are different than the toxicity values that were used in the risk assessment:
  - Trichloroethene (TCE): There was a slight change to the California EPA oral slope factor for TCE (changed from 0.015 to 0.013 $[mg/kg\text{-}day]^{-1}$) since the risk assessment was performed but this change should not significantly impact the potential cancer risk estimates. The current USEPA National Center for Environmental Assessment (NCEA) oral slope factor for TCE is more stringent by more than an order of magnitude than the value used in the risk assessment. For the inhalation slope factor, NCEA currently has a more stringent value than the value used in the risk assessment. However, the current California EPA inhalation slope factor for TCE is less stringent than the value used in the risk assessment. The current oral RfD from NCEA for TCE is more than an order of magnitude of more stringent than the value used in the risk assessment. The current inhalation RfD for TCE from NCEA and the inhalation RfD derived from the current REL from California EPA are both less stringent than the inhalation RfD used in the risk assessment. Consequently, there is uncertainty associated with the risk results for TCE due to various toxicity factors currently available, and potential risks and Hazard Quotients associated with TCE may be underestimated or overestimated.
  - Acetone: The current oral RfD is less stringent by a factor of 9 than the value used in the risk assessment. Since the inhalation RfD is route-extrapolated value from the oral RfD, the new route extrapolated inhalation RfD is also less stringent than the value used in the risk assessment. Consequently, the Hazard Quotients for acetone may be overestimated.
  - Benzene: The current oral RfD for benzene is less stringent than the value used in the risk assessment but the change should not significantly affect the HQs. The inhalation RfDs based on the current USEPA reference concentration and the California EPA REL are less stringent than the values used in the risk assessment. Consequently, HQs for benzene may be overestimated.
  - *sec*-Butylbenzene: The current NCEA oral RfD and route-extrapolated inhalation RfD are less stringent by a factor of four than the values used in the risk assessment. Therefore, the HQs for *sec*-butylbenzene may be overestimated.
  - 2-Methylnaphthalene: The current USEPA oral RfD for 2-methylnaphthalene is more stringent by a factor of five than the surrogate value that was used in the risk assessment. Therefore, the HQs for this chemical may be underestimated.
  - Toluene: The inhalation RfD based on the current California EPA REL is more stringent than the value used in the risk assessment but the change should not significantly affect the HQs.

- Xylenes: The current USEPA oral and inhalation RfDs are more stringent by at least an order of magnitude than the values used in the risk assessment. In addition, the inhalation RfD based on the current California EPA REL is more stringent by an order of magnitude than the value used in the risk assessment. Therefore, HQs for xylenes may be underestimated.

B1.7.6 Basis for No Action

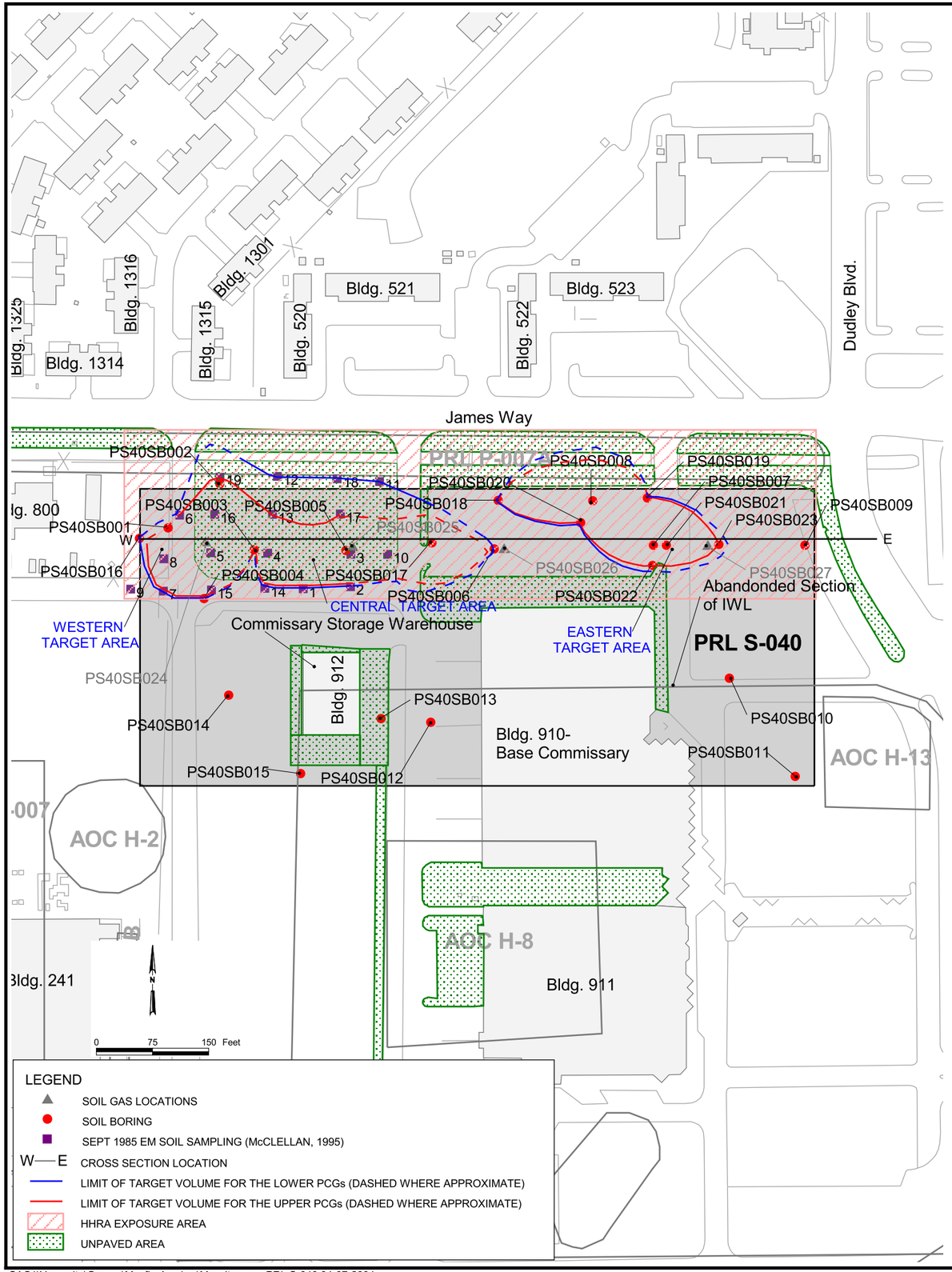
The risk estimates for PRL S-040 do not exceed the EPA's threshold of acceptable risk (i.e., hazard indices greater than 1 and the cancer risk greater than 1 x 10-6 for the residential scenario) except for the indoor air pathway. Hazard Quotients associated with exposure to two fuel-related contaminants, naphthalene, and 2-methyl naphthalene, were 3 and 6, respectively, when the indoor air pathway was included. This fuels-related contamination at PRL S-040 presents a threat to both human health and water quality, however, since fuels-only contamination is exempt from CERCLA, the contaminants will be addressed under State requirements. Therefore, no further action is warranted under CERCLA.

B1.8 Statutory Authority Finding

The Air Force has determined that no action is required under CERCLA for non-VOCs in soil at PRL S-040 because PRL S-040 is solely contaminated with fuel-related compounds. Sites contaminated with fuel-related compounds are excluded from CERCLA requirements. Therefore, the Air Force will remediate the fuel-related contaminants under State requirements.

B1.9 Documentation of Significant Changes

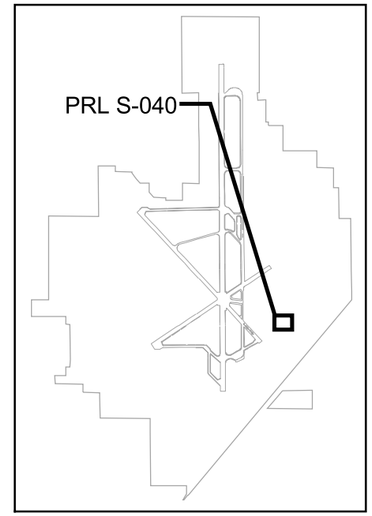
No significant changes for PRL S-040 have occurred since the Initial Parcel FS #1 was prepared.



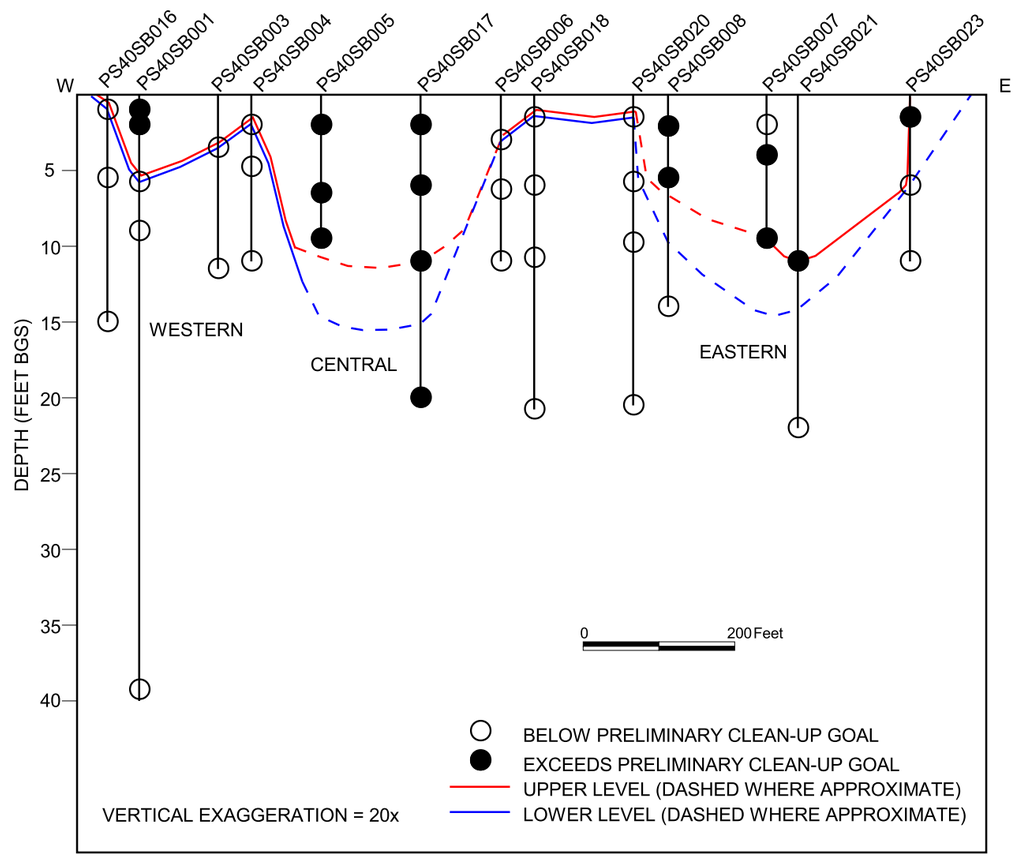
LEGEND

- SOIL GAS LOCATIONS
- SOIL BORING
- SEPT 1985 EM SOIL SAMPLING (McCLELLAN, 1995)
- W—E CROSS SECTION LOCATION
- LIMIT OF TARGET VOLUME FOR THE LOWER PCGs (DASHED WHERE APPROXIMATE)
- LIMIT OF TARGET VOLUME FOR THE UPPER PCGs (DASHED WHERE APPROXIMATE)
- HHRA EXPOSURE AREA
- UNPAVED AREA

KEY MAP



CROSS SECTION



PRL S-040 FIGURE B1-1
SITE FEATURES MAP

LRA INITIAL PARCEL RECORD OF DECISION #1
FORMER McCLELLAN AIR FORCE BASE
SACRAMENTO, CALIFORNIA

SAC \\Yosemite\Groups\Mcafb_Arcview\Mc_sites.apr PRL S-040 04-07-2004

Soil Boring	Depth (feet bgs)	2,6-Dinitrotoluene[a]	2-Methyl Nephthalene[b]	Napthalene[c]
PS40SB001	1.5	ND	ND	ND
	2	ND	**11J**	**5.6J**
	6	ND	ND	0.031J
	9.25	ND	ND	ND
	39.5	ND	ND	ND
PS40SB002	2	ND	ND	ND
	5.5	ND	ND	ND
	11.5	ND	ND	ND
PS40SB003	4.5	ND	ND	ND
	11.5	ND	ND	ND
PS40SB004	2	ND	ND	ND
	5	ND	ND	ND
	11.25	ND	ND	ND
PS40SB005	2	ND	**2.1**	1.2
	6.5	**0.63J**	**25**	ND
	9.5	ND	ND	ND
PS40SB006	3	ND	ND	ND
	6.5	ND	ND	ND
	11.5	ND	ND	ND
PS40SB007	2	ND	ND	ND
	4.25	ND	**2.2**	0.6J
	9.5	ND	0.86J	0.16J
PS40SB008	2.5	ND	**4.6**	**2.4**
	5.25	ND	**5.1J**	**3J**
	8.75	ND	ND	ND
PS40SB009	1.5	ND	ND	0.18J
	5.25	ND	0.55J	ND
	8.75	ND	ND	ND
PS40SB010	1.5	ND	ND	ND
	6	ND	ND	ND
	9.25	ND	ND	ND
PS40SB011	2	ND	ND	ND
	5.75	ND	ND	ND
	9.5	ND	ND	ND
	39.5	ND	ND	ND
PS40SB012	2.5	ND	ND	ND
	5.5	ND	ND	ND
	9.5	ND	ND	ND
PS40SB013	2	ND	ND	ND
	6	ND	ND	ND
	10.25	ND	ND	ND
PS40SB014	3	ND	ND	ND
	6.5	ND	ND	ND
	11.5	ND	ND	ND
PS40SB015	2.5	ND	ND	ND
	5.25	ND	ND	ND
	9.25	ND	ND	ND
PS40SB016	0.5	ND	ND	ND
	5.5	ND	ND	ND
	10.5	ND	ND	ND
PS40SB017	2	ND	1.7J	1.5J
	5.75	ND	1.3J	0.44J
	11	ND	0.34J	0.17J
	20	ND	**3**	ND
PS40SB018	1.5	ND	ND	ND
	6	ND	ND	ND
	10.75	ND	ND	ND
PS40SB019	1.25	ND	ND	ND
	6	ND	ND	ND
	11	ND	ND	ND
	20	ND	ND	ND
PS40SB020	1.5	ND	ND	ND
	5.25	ND	ND	ND
	9.75	ND	ND	ND
	20.5	ND	ND	ND
PS40SB021	11	ND	**5J**	1.3J
	22	ND	ND	ND
PS40SB022	1.5	ND	ND	ND
	6	ND	ND	ND
	11	ND	ND	ND
	20	ND	0.062J	ND
PS40SB023	1.5	ND	0.026J	ND
	5.5	ND	ND	ND
	10.5	ND	ND	ND
	20.5	ND	ND	ND

Bold Text-exceeds preliminary cleanup goal.

NA - Not Analyzed

ND - Not Detected

[a]Preliminary cleanup goal for 2,6-dinitrotoluene is 0.0024 in surface and shallow soil.

[b]Preliminary cleanup goal for 2-methyl naphthalene is 2.0 in surface and shallow soil.

[c]Preliminary cleanup goal for naphthalene is 1.9 in surface and shallow soil.

Soil Boring	Depth (feet bgs)	TPH-D Concentration (mg/kg)[a]	TPH-G Concentration (mg/kg)[b]
PS40SB001	**1.5**	**220**	ND
	2	**2,800**	**730**
	5.75	34	ND
	9	ND	ND
	39.25	ND	ND
PS40SB002	2	ND	ND
	5.25	ND	ND
	11.25	ND	ND
PS40SB003	4	48	ND
	11.25	ND	ND
PS40SB004	2	21	ND
	4.75	ND	ND
	11	ND	ND
PS40SB005	**2**	**4,200**	**360**
	6.25	**11,000**	**1,600J**
	9.25	ND	**15**
PS40SB006	3	ND	ND
	6.25	12J	ND
	11	18	ND
PS40SB007	2	45	ND
	4	**530**	**690/230J**
	9.25	**290**	**26**
PS40SB008	**2.5**	**6,300/5,900**	**510**
	5.5	8.8J	ND
	14	11J	ND
PS40SB009	**1.5**	89	**34**
	5	ND	ND
	9	ND	ND
PS40SB010	1.5	ND	ND
	5.75	ND	ND
PS40SB011	2	ND	ND
	5.5	ND	ND
	9.25	ND	ND
	39.25	ND	ND
PS40SB012	2.5	ND	ND
	5.25	ND	ND
	9.25	ND	ND
PS40SB013	2	ND	ND
	5.75	ND	ND
	10	ND	ND
PS40SB014	3	ND	ND
	6.25	ND	ND
	11.25	ND	ND
PS40SB015	2.5	11	ND
	5	ND	ND
	9	ND	ND
PS40SB016	0.5	ND	ND
	5.5	ND	ND
	10.5	ND	ND
PS40SB017	**2**	**3,800**	**180**
	6	**410**	**170**
	11	**59**	**280**
PS40SB018	1.5	ND	ND
	6	ND	ND
	10.75	9.2J	ND
	20.75	ND	ND
PS40SB019	1.25	ND	ND
	6	ND	ND
	11	ND	ND
	21	ND	ND
PS40SB020	1.5	ND	ND
	5.25	8.4J/8.8J	ND
	9.75	ND	0.17J
	20.5	ND	ND
PS40SB021	**11**	**270**	0.26J
	22	ND	ND
PS40SB022	1.5	42	ND
	6	ND	0.19J
	11	ND	ND
	20	10	ND
PS40SB023	**1.5**	**130**	0.58J
	5.5	ND	0.28J
	10.5	ND	ND
	20.5	ND	ND

Bold Text-exceeds preliminary cleanup goal.

NA - Not Analyzed

ND - Not Detected

[a]Preliminary cleanup goals for TPH-D in shallow and surface soil are 100 mg/kg (for the lower goal) and 3,900 mg/kg in shallow soil and 3,190 mg/kg in suface soil (for the upper goal).

[b]Preliminary cleanup goals for TPH-G in shallow and surface soil are 10 mg/kg (for the lower goal) and 220 mg/kg in shallow soil and 160 mg/kg in suface soil (for the upper goal).

PIT DATA

Soil Boring	Depth (feet bgs)	TPH-D Concentration (mg/kg)[a]
Pit 1	3	12
Pit 2	1	10.5
	2	1.2
	3	3.8
Pit 3	1	**13,000**
	2	**30,000**
	3	**21,000**
Pit 4	5	**17,000**
Pit 5	1	**14,000**
	2	**16,000**
	3	**4,000**
Pit 6	1	**1.6**
Pit 7	1	**9,200**
	2	1.8
Pit 8	1	68
	1	1.1
	3	4.7
Pit 9	1	1.9
	2	1.5
Pit 10	1	**314**
	2	**500**
	3	**18,000**
Pit 11	1	10
	2	11
Pit 12	1	1.0
	3	11
Pit 13	1	**1,400**
	2	**1,900**
	3	**1,200**
Pit 14	2	1.9
Pit 15	2	**9,284**
Pit 16	2	5.1
	4	**7,270**
Pit 17	2	**463**
	4	36.1
Pit 18	4	47.9
Pit 19	2	2.8
	4	78.5/**150**

[a]Preliminary cleanup goals for TPH-D in shallow and surface soil are 100 mg/kg (for the lower goal) and 3,900 mg/kg in shallow soil and 3,190 mg/kg in suface soil (for the upper goal).
Source: September 1985 EM Soil Sampling (Draft PA, 1995)

PRL S-040 FIGURE B1-2
DATA TABLES
LRA INITIAL PARCEL RECORD OF DECISION #1
FORMER McCLELLAN AIR FORCE BASE
SACRAMENTO, CALIFORNIA

Table B1-1a
Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations
PRL S-040

Scenario Timeframe:	**Future**							
Medium	**Soil Gas**							
Exposure Medium	**Soil Gas**							
Exposure Point	**Chemical of Concern**	**Concentration Detected (ppbv)**		**Frequency of Detection**	**95th UCL Concentration (ppbv)**	**Statistical Measure[a]**	**Exposure Point Concentration[b] (ppbv)**	**Exposure Point Concentration in Soil[c,d] (mg/kg)**
		Min	**Max**					
PRL S-040 - Soil Gas	Benzene	2.0E+02	2.0E+02	1/6	1.6E+02	95UCL Lognormal	1.6E+02	6.0E-04
	Ethylbenzene	1.0E+02	8.8E+02	1/2	1.0E+03	Max Detect	8.8E+02	4.0E-03
	n-Hexane	3.9E+03	3.9E+03	1/2	>1.0E+06	Max Detect	3.9E+03	3.0E-03
	2,2,4-Trimethylpentane	3.9E+02	1.3E+05	3/6	>1.0E+06	Max Detect	1.3E+05	1.0E-01
	Xylenes	3.2E+02	3.4E+03	2/6	2.5E+04	Max Detect	3.4E+03	6.0E-02

[a] The statistical measure indicates the basis for the exposure point concentration.

[b] The exposure point concentration is the lower value of the maximum concentration or the 95th UCL concentration.

[c] Exposure point concentrations for these VOCs in soil are modeled from measured shallow soil gas concentrations.

[d] Modeled VOC concentrations in soil were used to evaluate the ingestion, dermal contact, and inhalation exposure pathways.

95th UCL = 95 percent upper confidence limit on the mean.

Table B1-1b
Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations
PRL S-040

Scenario Timeframe:	**Future**				
Medium	**Air**				
Exposure Medium	**Air**				
					Exposure Point Concentration
Exposure Point	**Chemical of Concern**	**Exposure Point Concentration in Soil[a] (mg/kg)**	**1-Year Flux Rate (g/m^2-s)**	**30-Year Flux Rate (g/m^2-s)**	**Residential Indoor[b] (mg/m^3)**
PRL S-040 - VOCs in Air	Benzene	6.0E-04	2.26E-11	4.03E-12	2.0E-06
	Ethylbenzene	4.0E-03	1.21E-10	2.68E-11	2.0E-05
	n -Hexane	3.0E-03	6.59E-10	1.84E-11	1.0E-05
	2,2,4-Trimethylpentane	1.0E-01	1.31E-08	7.00E-10	4.0E-04
	Xylenes	6.0E-02	1.79E-11	1.50E-10	9.0E-05

[a] Exposure point concentrations for these VOCs in soil are modeled from measured shallow soil gas concentrations.

[b] Emissions from soil and resulting air concentrations were estimated from models using the exposure point concentration modeled in soil.

Table B1-1c
Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations
PRL S-040

Scenario Timeframe:	**Future**						
Medium	**Groundwater**						
Exposure Medium	**Groundwater**						
Exposure Point	**Chemical of Concern**	**Concentration Detected (µg/L)**		**Frequency of Detection**	**95th UCL Concentration[a] (µg/L)**	**Statistical Measure[b]**	**Exposure Point Concentration[c] (µg/L)**
		Min	**Max**				
PRL S-040 - Groundwater On-site Direct Contact	Acetone	9.4E+00	9.4E+00	1/2	--	Max Detect	9.4E+00
	Benzene	1.2E-01	4.6E-01	2/2	--	Max Detect	4.6E-01
	sec- Butylbenzene	2.7E-01	2.7E-01	1/2	--	Max Detect	2.7E-01
	Ethylbenzene	1.3E+00	1.3E+00	1/2	--	Max Detect	1.3E+00
	p- Isopropyltoluene	1.1E-01	1.1E-01	1/2	--	Max Detect	1.1E-01
	Naphthalene	1.4E+00	1.4E+00	1/2	--	Max Detect	1.4E+00
	n- Propylbenzene	3.1E-01	3.1E-01	1/2	--	Max Detect	3.1E-01
	Toluene	2.5E-01	2.8E-01	2/2	--	Max Detect	2.8E-01
	Trichloroethene	4.6E-01	4.6E-01	1/2	--	Max Detect	4.6E-01
	1,2,4-Trimethylbenzene	1.6E+00	1.6E+00	1/2	--	Max Detect	1.6E+00
	1,3,5-Trimethylbenzene	7.2E-01	7.2E-01	1/2	--	Max Detect	7.2E-01
	Xylenes	6.6E+00	6.6E+00	1/2	--	Max Detect	6.6E+00

[a] Due to the limited data set, a statistical analysis could not be conducted to determine the 95th UCL concentration.
[b] The statistical measure indicates the basis for the exposure point concentration.
[c] The exposure point concentration is the lower value of the maximum concentration or the 95th UCL concentration.

95th UCL = 95 percent upper confidence limit on the mean.

Table B1-1d
Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations
PRL S-040

Scenario Timeframe:	**Future**						
Medium	**Soil**						
Exposure Medium	**Soil**						
Exposure Point	**Chemical of Concern**	**Concentration Detected (mg/kg) Min**	**Max**	**Frequency of Detection**	**95th UCL Concentration (mg/kg)**	**Statistical Measure[a]**	**Exposure Point Concentration[b] (mg/kg)**
PRL S-040 - Soil On-site Direct Contact (0-2 ft bgs)	Copper	1.4E+01	3.7E+01	12/12	2.5E+01	95UCL Lognormal	2.5E+01
	Lead	3.4E+00	1.3E+01	11/12	7.8E+00	95UCL Normal	7.8E+00
	Vanadium	3.8E+01	8.7E+01	12/12	6.5E+01	95UCL Normal	6.5E+01
	Zinc	2.8E+01	7.9E+01	11/11	5.3E+01	95UCL Lognormal	5.3E+01
	Benzo(a)anthracene	2.0E-02	2.0E-02	1/19	6.0E-02	Max Detect	2.0E-02
	Benzo(g,h,i)perylene	2.0E-02	2.0E-02	1/19	6.0E-02	Max Detect	2.0E-02
	2-Methylnaphthalene	2.6E-02	1.1E+01	6/19	2.2E+01	Max Detect	1.1E+01
	Naphthalene	1.8E-01	5.6E+00	5/19	6.7E+00	Max Detect	5.6E+00
	N-nitrosodiphenylamine	2.6E-02	2.6E-02	1/19	5.9E-02	Max Detect	2.6E-02
	Phenanthrene	1.9E-01	1.9E-01	1/19	1.1E-01	95UCL Lognormal	1.1E-01
PRL S-040 - Soil On-site Direct Contact (0-10 ft bgs)	Copper	1.2E+01	4.4E+01	30/30	2.6E+01	95UCL Lognormal	2.6E+01
	Lead	2.9E+00	1.3E+01	28/30	7.9E+00	95UCL Normal	7.9E+00
	Vanadium	3.8E+01	8.7E+01	29/29	6.0E+01	95UCL Normal	6.0E+01
	Zinc	2.8E+01	1.0E+02	27/27	5.6E+01	95UCL Lognormal	5.6E+01
	Benzo(a)anthracene	2.1E-02	2.1E-02	1/52	2.2E-02	Max Detect	2.1E-02
	Benzo(g,h,i)perylene	2.1E-02	2.1E-02	1/52	2.2E-02	Max Detect	2.1E-02
	2,6-Dinitrotoluene	6.3E-01	6.3E-01	1/52	2.5E-02	95UCL Lognormal	2.5E-02
	Fluorene	5.1E-02	1.3E+00	2/52	3.9E-02	95UCL Lognormal	3.9E-02
	2-Methylnaphthalene	2.6E-02	2.5E+01	13/52	1.6E+00	95UCL Lognormal	1.6E+00
	Naphthalene	3.1E-02	5.6E+00	11/52	2.8E-01	95UCL Lognormal	2.8E-01
	N-nitrosodiphenylamine	2.6E-02	2.6E-02	1/52	2.3E-02	95UCL Lognormal	2.3E-02
	Phenanthrene	3.2E-02	9.6E-01	4/52	4.1E-02	95UCL Lognormal	4.1E-02

[a] The statistical measure indicates the basis for the exposure point concentration.

[b] The exposure point concentration is the lower value of the maximum concentration or the 95th UCL concentration.

95th UCL = 95 percent upper confidence limit on the mean.

Table B1-2
Cancer Toxicity Data Summary
PRL S-040

Pathway: Ingestion, Dermal						
Chemical of Concern	Oral Cancer Slope Factor	Dermal Cancer Slope Factor	Slope Factor Units	Weight of Evidence[a]	Source	Date
Copper						
Lead				B2		
Vanadium						
Zinc						
Acetone						
Benzene	1.0E-01	1.0E-01	$(mg/kg\text{-}day)^{-1}$	A	Cal-EPA	2000
Benzo(a)anthracene	1.2E+00	1.2E+00	$(mg/kg\text{-}day)^{-1}$	B2	PEF	1993
Benzo(g,h,i)perylene						
sec-Butylbenzene						
2,6-Dinitrotoluene						
Ethylbenzene						
Fluorene						
n-Hexane						
p-Isopropyltoluene						
2-Methylnaphthalene						
Naphthalene				C		
N-nitrosodiphenylamine	9.0E-03	9.0E-03	$(mg/kg\text{-}day)^{-1}$	B2	Cal-EPA	2000
Phenanthrene						
n-Propylbenzene						
Toluene						
Trichloroethene	1.5E-02	1.5E-02	$(mg/kg\text{-}day)^{-1}$	B2/C	NCEA	2000
1,2,4-Trimethylbenzene						
1,3,5-Trimethylbenzene						
2,2,4-Trimethylpentane						
Xylenes						

Pathway: Inhalation					
Chemical of Concern	Inhalation Cancer Slope Factor	Slope Factor Units	Weight of Evidence[a]	Source	Date
Copper					
Lead			B2		
Vanadium					
Zinc					
Acetone					
Benzene	1.0E-01	$(mg/kg\text{-}day)^{-1}$	A	Cal-EPA	2000
Benzo(a)anthracene	3.9E-01	$(mg/kg\text{-}day)^{-1}$	B2	PEF	1993
Benzo(g,h,i)perylene					
sec-Butylbenzene					
2,6-Dinitrotoluene					
Ethylbenzene					
Fluorene					
n-Hexane					
p-Isopropyltoluene					
2-Methylnaphthalene					
Naphthalene			C		
N-nitrosodiphenylamine	9.0E-03	$(mg/kg\text{-}day)^{-1}$	B2	Cal-EPA	2000
Phenanthrene					
n-Propylbenzene					
Toluene					
Trichloroethene	1.0E-02	$(mg/kg\text{-}day)^{-1}$	B2/C	NCEA	2000
1,2,4-Trimethylbenzene					
1,3,5-Trimethylbenzene					
2,2,4-Trimethylpentane					
Xylenes					

[a]Weight of Evidence Classification

A - human carcinogen
B1 and B2 - probable human carcinogen
C - possible human carcinogen
D - not classifiable as a human carcinogen
E - evidence of noncarcinogenicity for humans

Reference = USEPA 1989. Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A). EPA/540/1-89/002. December.

Table B1-3
Non-Cancer Toxicity Data Summary
PRL S-040

Pathway: Ingestion, Dermal									
Chemical of Concern	Chronic/subchronic	Oral RfD	Oral RfD Units	Dermal RfD	Dermal RfD Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ
Copper	Chronic	3.7E-02	(mg/kg-day)	3.7E-02	(mg/kg-day)	Gastro-intestinal system		HEAST	1997
Lead									
Vanadium	Chronic	7.0E-03	(mg/kg-day)	7.0E-03	(mg/kg-day)	Liver and kidney	100	HEAST	1997
Zinc	Chronic	3.0E-01	(mg/kg-day)	3.0E-01	(mg/kg-day)	Blood-forming system	3	IRIS	2000
Acetone	Chronic	1.0E-01	(mg/kg-day)	1.0E-01	(mg/kg-day)	Kidney	1000	IRIS	2000
Benzene	Chronic	3.0E-03	(mg/kg-day)	3.0E-03	(mg/kg-day)	Blood-forming system	3000	NCEA	2000
Benzo(a)anthracene	Chronic	3.0E-02	(mg/kg-day)	3.0E-02	(mg/kg-day)			SURROGATE	
Benzo(g,h,i)perylene	Chronic	3.0E-02	(mg/kg-day)	3.0E-02	(mg/kg-day)			SURROGATE	
sec-Butylbenzene	Chronic	1.0E-02	(mg/kg-day)	1.0E-02	(mg/kg-day)	Kidney	10000	NCEA	2000
2,6-Dinitrotoluene	Chronic	1.0E-03	(mg/kg-day)	1.0E-03	(mg/kg-day)	Nervous system	3000	HEAST	1997
Ethylbenzene	Chronic	1.0E-01	(mg/kg-day)	1.0E-01	(mg/kg-day)	Liver and kidney	1000	IRIS	2000
Fluorene	Chronic	4.0E-02	(mg/kg-day)	4.0E-02	(mg/kg-day)	Blood-forming system	3000	IRIS	2000
n-Hexane	Chronic	6.0E-02	(mg/kg-day)	6.0E-02	(mg/kg-day)	Nervous system	10000	HEAST	1997
p-Isopropyltoluene	Chronic	1.0E-01	(mg/kg-day)	1.0E-01	(mg/kg-day)			SURROGATE	
2-Methylnaphthalene	Chronic	2.0E-02	(mg/kg-day)	2.0E-02	(mg/kg-day)			SURROGATE	
Naphthalene	Chronic	2.0E-02	(mg/kg-day)	2.0E-02	(mg/kg-day)	Decreased body weight	3000	IRIS	2000
N-nitrosodiphenylamine	Chronic								
Phenanthrene	Chronic	3.0E-02	(mg/kg-day)	3.0E-02	(mg/kg-day)			SURROGATE	
n-Propylbenzene	Chronic	4.0E-02	(mg/kg-day)	4.0E-02	(mg/kg-day)	Nervous system		NCEA	2002
Toluene	Chronic	2.0E-01	(mg/kg-day)	2.0E-01	(mg/kg-day)	Liver and kidney	1000	IRIS	2000
Trichloroethene	Chronic	6.0E-03	(mg/kg-day)	6.0E-03	(mg/kg-day)			NCEA	2000
1,2,4-Trimethylbenzene	Chronic	5.0E-02	(mg/kg-day)	5.0E-02	(mg/kg-day)	Blood-forming system		NCEA	2000
1,3,5-Trimethylbenzene	Chronic	5.0E-02	(mg/kg-day)	5.0E-02	(mg/kg-day)	Blood-forming system		NCEA	2000
2,2,4-Trimethylpentane	Chronic	6.0E-02	(mg/kg-day)	6.0E-02	(mg/kg-day)			SURROGATE	
Xylenes	Chronic	2.0E+00	(mg/kg-day)	2.0E+00	(mg/kg-day)	Decreased body weight	1000	IRIS	2000

Pathway: Inhalation							
Chemical of Concern	Chronic/subchronic	Inhalation RfD	Inhalation RfD Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ
Copper	Chronic	3.7E-02	mg/kg-day	Gastro-intestinal system		ROUTE	
Lead							
Vanadium	Chronic	7.0E-03	mg/kg-day	Liver and kidney	100	ROUTE	
Zinc	Chronic	3.0E-01	mg/kg-day	Blood-forming system	3	ROUTE	
Acetone	Chronic	1.0E-01	mg/kg-day	Kidney	1000	ROUTE	
Benzene	Chronic	1.7E-03	mg/kg-day	Blood-forming system	3000	NCEA	2000
Benzo(a)anthracene	Chronic	3.0E-02	mg/kg-day			SURROGATE	
Benzo(g,h,i)perylene	Chronic	3.0E-02	mg/kg-day			SURROGATE	
sec-Butylbenzene	Chronic	1.0E-02	mg/kg-day	Kidney	10000	ROUTE	
2,6-Dinitrotoluene	Chronic	1.0E-03	mg/kg-day	Nervous system	3000	ROUTE	
Ethylbenzene	Chronic	2.9E-01	mg/kg-day	Liver and kidney	1000	IRIS	2000
Fluorene	Chronic	4.0E-02	mg/kg-day	Blood-forming system	3000	ROUTE	
n-Hexane	Chronic	5.7E-02	mg/kg-day	Nervous system	10000	IRIS	2000
p-Isopropyltoluene	Chronic	1.1E-01	mg/kg-day			SURROGATE	
2-Methylnaphthalene	Chronic	8.6E-04	mg/kg-day			SURROGATE	
Naphthalene	Chronic	8.6E-04	mg/kg-day	Decreased body weight	3000	IRIS	2000
N-nitrosodiphenylamine							
Phenanthrene	Chronic	3.0E-02	mg/kg-day			SURROGATE	
n-Propylbenzene							
Toluene	Chronic	1.1E-01	mg/kg-day	Liver and kidney	1000	IRIS	2000
Trichloroethene	Chronic	6.0E-03	mg/kg-day			ROUTE	
1,2,4-Trimethylbenzene	Chronic	1.7E-03	mg/kg-day	Blood-forming system		NCEA	2000
1,3,5-Trimethylbenzene	Chronic	1.7E-03	mg/kg-day	Blood-forming system		NCEA	2000
2,2,4-Trimethylpentane	Chronic	5.7E-02	mg/kg-day			SURROGATE	
Xylenes	Chronic	2.0E+00	mg/kg-day	Decreased body weight	1000	ROUTE	

Notes:
Toxicity values used were accurate as of the date of report submittal and are not necessarily the most current values.
Blank cells indicate information is not available or not applicable.

Cal-EPA = California Environmental Protection Agency
HEAST = Health Effects Assessment Summary Table
IRIS = Integrated Risk Information System
NCEA = National Center for Environmental Assessment, USEPA
PEF = Potency equivalency factor (USEPA 1993)
ROUTE = route-to-route extrapolated value (e.g., oral RfD used for inhalation RfD)
SURROGATE =
RfDs for pyrene used for benzo(a)anthracene, benzo(g,h,I)perylene; and phenanthrene.
RfDs for n-butylbenzene used for isopropyltoluene.
RfDs for n-hexane used for 2,2,4-trimethylpentane.
RfDs for naphthalene used for 2-methylnaphthalene.

Table B1-4
Risk Characterization Summary - Carcinogens
PRL S-040

Scenario Timefram	**Future**									
Receptor Populatio	**Resident**									
Receptor Age:	**Adult**									
						Carcinogenic Risk				
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	PRL S-040 - Soil On-site Direct Contact (0-2 ft bgs)	Benzene	6.0E-04	mg/kg	9.E-11	3.E-08	3.E-11		3.E-08
			Benzo(a)anthracene	6.0E-02	mg/kg	4.E-08	1.E-13	2.E-08	2.E-07	2.E-07
			N- nitrosodiphenylamine	2.6E-02	mg/kg	4.E-10	4.E-15	1.E-10	8.E-10	1.E-09
			TOTAL			**4.E-08**	**3.E-08**	**2.E-08**	**2.E-07**	**3.E-07**
		PRL S-040 - Soil On-site Direct Contact (0-10 ft bgs)	Benzene	6.0E-04	mg/kg	9.E-11	3.E-08	3.E-11		3.E-08
			Benzo(a)anthracene	2.1E-02	mg/kg	4.E-08	1.E-13	2.E-08	2.E-07	2.E-07
			N- nitrosodiphenylamine	2.3E-02	mg/kg	3.E-10	3.E-16	1.E-10	7.E-10	1.E-09
			TOTAL			**4.E-08**	**3.E-08**	**2.E-08**	**2.E-07**	**3.E-07**
Groundwater	Groundwater	PRL S-040 - Groundwater On-site Direct Contact	Benzene	4.6E-01	µg/L	7.E-07	3.E-06	1.E-07		4.E-06
			Trichloroethene	4.6E-01	µg/L	1.E-07	3.E-07	2.E-08		5.E-07
			TOTAL			**8.E-07**	**4.E-06**	**1.E-07**		**5.E-06**

TOTAL Soil (0-2 ft bgs) + Groundwater Risks = 5.E-06
TOTAL Soil (0-10 ft bgs) + Groundwater Risks = 5.E-06

Table B1-5
Risk Characterization Summary - Non-Carcinogens
PRL S-040

Scenario Timeframe: **Future**
Receptor Population: **Resident**
Receptor Age: **Adult**

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Primary Target Organ	Non-Carcinogenic Hazard Quotient				
							Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	PRL S-040 - SoilOn-site Direct Contact (0-2 ft bgs)	Copper	2.5E+01	mg/kg	Gastro-intestinal system	7.E-03	7.E-08	2.E-04	1.E-02	2.E-02
			Lead	7.8E+00	mg/kg	--	--	--	--	--	--
			Vanadium	6.5E+01	mg/kg	Liver and kidney	1.E-01	9.E-07	3.E-03	2.E-01	3.E-01
			Zinc	5.3E+01	mg/kg	Blood-forming system	2.E-03	2.E-08	5.E-05	4.E-03	6.E-03
			Acetone	--	--	Kidney	--	--	--	--	--
			Benzene	6.0E-04	mg/kg	Blood-forming system	2.E-06	1.E-03	6.E-07		1.E-03
			Benzo(a)anthracene	6.0E-02	mg/kg	--	7.E-06	7.E-11	3.E-06	3.E-05	4.E-05
			Benzo(g,h,i)perylene	6.0E-03	mg/kg	--	7.E-06	6.E-11	3.E-06	2.E-05	3.E-05
			sec- Butylbenzene	--	--	Kidney	--	--	--	--	--
			2,6-Dinitrotoluene	--	--	Nervous system	--	--	--	--	--
			Ethylbenzene	4.0E-03	mg/kg	Liver and kidney	4.E-07	6.E-05	1.E-07		6.E-05
			Fluorene	--	--	Blood-forming system	--	--	--	--	--
			n -Hexane	3.0E-03	mg/kg	Nervous system	6.E-07	2.E-04	2.E-07		2.E-04
			p -Isopropyltoluene								
			2-Methylnaphthalene	1.1E+01	mg/kg		8.E-03	1.E-06	2.E-03	1.E-01	1.E-01
			Naphthalene	5.6E+00	mg/kg	Decreased body weight	3.E-03		9.E-04		4.E-03
			N- nitrosodiphenylamine	2.6E-02	mg/kg	--	--	--	--	--	--
			Phenanthrene	1.1E-01	mg/kg	--	4.E-05	4.E-10	2.E-05	5.E-04	5.E-04
			n -Propylbenzene	--	--	Nervous system	--	--	--	--	--
			Toluene	--	--	Liver and kidney	--	--	--	--	--
			Trichloroethene	--	--	Nervous system	--	--	--	--	--
			1,2,4-Trimethylbenzene	--	--	Blood-forming system	--	--	--	--	--
			1,3,5-Trimethylbenzene	--	--	Blood-forming system	--	--	--	--	--
			2,2,4-Trimethylpentane	1.0E-01	mg/kg	--	2.E-05	6.E-03	5.E-06		6.E-03
			Xylenes	6.0E-02	mg/kg	Decreased body weight	3.E-07	4.E-05	9.E-08	--	4.E-05
			TOTAL				**1.E-01**	**8.E-03**	**6.E-03**	**3.E-01**	**5.E-01**
		PRL S-040 - Soil On-site Direct Contact (0-10 ft bgs)	Copper	2.6E+01	mg/kg	Gastro-intestinal system	8.E-03	7.E-08	2.E-04	2.E-02	2.E-02
			Lead	7.9E+00	mg/kg	--	--	--	--	--	--
			Vanadium	6.0E+01	mg/kg	Liver and kidney	1.E-01	9.E-07	3.E-03	2.E-01	3.E-01
			Zinc	5.6E+01	mg/kg	Blood-forming system	2.E-03	2.E-08	6.E-05	4.E-03	6.E-03
			Acetone	--	--	Kidney	--	--	--	--	--
			Benzene	6.0E-04	mg/kg	Blood-forming system	2.E-06	1.E-03	6.E-07		1.E-03
			Benzo(a)anthracene	2.1E-01	mg/kg	--	8.E-06	7.E-11	3.E-06	3.E-05	4.E-05
			Benzo(g,h,i)perylene	2.1E-02	mg/kg	--	8.E-06	7.E-11	3.E-06	2.E-05	3.E-05
			sec- Butylbenzene	--	--	Kidney	--	--	--	--	--
			2,6-Dinitrotoluene	2.5E-02	mg/kg	Nervous system	3.E-04	3.E-09	8.E-05	5.E-04	9.E-04
			Ethylbenzene	4.0E-03	mg/kg	Liver and kidney	4.E-07	6.E-05	1.E-07	--	6.E-05
			Fluorene	3.9E-02	mg/kg	Blood-forming system	1.E-05	--	5.E-06	--	2.E-05
			n -Hexane	3.0E-03	mg/kg	Nervous system	6.E-07	2.E-04	2.E-07	--	2.E-04
			p -Isopropyltoluene	--	--	--	--	--	--	--	--
			2-Methylnaphthalene	1.6E+00	mg/kg	--	9.E-04	2.E-07	2.E-04	2.E-02	2.E-02
			Naphthalene	2.8E-01	mg/kg	Decreased body weight	2.E-04	--	4.E-05		2.E-04
			N- nitrosodiphenylamine	2.3E-02	mg/kg	--	--	--	--	--	--
			Phenanthrene	4.1E-02	mg/kg	--	2.E-05	1.E-10	6.E-06	2.E-04	2.E-04
			n -Propylbenzene	--	--	Nervous system	--	--	--	--	--
			Toluene	--	--	Liver and kidney	--	--	--	--	--
			Trichloroethene	--	--	Nervous system	--	--	--	--	--
			1,2,4-Trimethylbenzene	--	--	Blood-forming system	--	--	--	--	--
			1,3,5-Trimethylbenzene	--	--	Blood-forming system	--	--	--	--	--
			2,2,4-Trimethylpentane	1.0E-01	mg/kg		2.E-05	6.E-03	5.E-06	--	6.E-03
			Xylenes	6.0E-02	mg/kg	Decreased body weight	3.E-07	4.E-05	9.E-08	--	4.E-05
			TOTAL				**1.E-01**	**8.E-03**	**3.E-03**	**2.E-01**	**3.E-01**
Groundwater	Groundwater	PRL S-040 - Groundwater On-site Direct Contact	Copper	--	--	Gastro-intestinal system	--	--	--	--	--
			Lead	--	--	--	--	--	--	--	--
			Vanadium	--	--	Liver and kidney	--	--	--	--	--
			Zinc	--	--	Blood-forming system	--	--	--	--	--
			Acetone	9.4E+00	µg/L	Kidney	9.E-03	4.E-02	3.E-05	--	5.E-02
			Benzene	4.6E-01	µg/L	Blood-forming system	1.E-02	1.E-01	2.E-03	--	1.E-01
			Benzo(a)anthracene	--	--	--	--	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	--	--	--
			sec- Butylbenzene	2.7E-01	µg/L	Kidney	3.E-03	1.E-02		--	1.E-02
			2,6-Dinitrotoluene	--	--	Nervous system	--	--	--	--	--
			Ethylbenzene	1.3E+00	µg/L	Liver and kidney	1.E-03	2.E-03	7.E-04	--	4.E-03
			Fluorene	--	--	Blood-forming system	--	--	--	--	--
			n -Hexane	--	--	Nervous system	--	--	--	--	--
			p -Isopropyltoluene	1.1E-01	µg/L		1.E-04	5.E-04	--	--	6.E-04
			2-Methylnaphthalene	--	--	--	--	--	--	--	--
			Naphthalene	1.4E+00	µg/L	Decreased body weight	6.E-03	7.E-01	4.E-03	--	8.E-01
			N- nitrosodiphenylamine	--	--	--	--	--	--	--	--
			Phenanthrene	--	--	--	--	--	--	--	--
			n -Propylbenzene	3.1E-01	µg/L	Nervous system	--	--	--	--	--
			Toluene	2.8E-01	µg/L	Liver and kidney	1.E-04	1.E-03	4.E-05	--	1.E-03
			Trichloroethene	4.6E-01	µg/L	Nervous system	7.E-03	4.E-02	1.E-03	--	4.E-02
			1,2,4-Trimethylbenzene	1.6E+00	µg/L	Blood-forming system	3.E-03	4.E-01	3.E-03	--	4.E-01
			1,3,5-Trimethylbenzene	7.2E-01	µg/L	Blood-forming system	1.E-03	2.E-01	2.E-03	--	2.E-01
			2,2,4-Trimethylpentane	--	--	--	--	--	--	--	--
			Xylenes	6.6E+00	µg/L	Decreased body weight	3.E-04	2.E-03	2.E-04	--	2.E-03
			TOTAL				**4.E-02**	**2.E+00**	**1.E-02**	--	**2.E+00**

Receptor Hazard Index (soil [0-2 ft bgs] + groundwater) = **2.E+00**
Receptor Hazard Index (soil [0-10 ft bgs] + groundwater) = **2.E+00**

Table B1-5
Risk Characterization Summary - Non-Carcinogens
PRL S-040

Scenario Timeframe: **Future**
Receptor Population: **Resident**
Receptor Age: **Child**

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Exposure Point Concentration	Exposure Point Concentration Units	Primary Target Organ	Non-Carcinogenic Hazard Quotient				
							Ingestion	Inhalation	Dermal	Produce	Exposure Routes Total
Soil	Soil	PRL S-040 - Soil On-site Direct Contact (0-2 ft bgs)	Copper	2.5E+01	mg/kg	Gastro-intestinal system	6.E-03	1.E-08	2.E-04	1.E-02	2.E-02
			Lead	7.8E+00	mg/kg	--	--	--	--	--	--
			Vanadium	6.5E+01	mg/kg	Liver and kidney	9.E-02	2.E-07	2.E-03	1.E-01	2.E-01
			Zinc	5.3E+01	mg/kg	Blood-forming system	1.E-03	1.E-08	4.E-05	3.E-03	4.E-03
			Acetone	--	--	Kidney	--	--	--	--	--
			Benzene	6.0E-04	mg/kg	Blood-forming system	2.E-06	2.E-04	5.E-07		2.E-04
			Benzo(a)anthracene	6.0E-02	mg/kg	--	6.E-06	2.E-11	3.E-06	2.E-05	3.E-05
			Benzo(g,h,i)perylene	6.0E-03	mg/kg	--	6.E-06	2.E-11	3.E-06	1.E-05	2.E-05
			sec- Butylbenzene	--	--	Kidney	--	--	--	--	--
			2,6-Dinitrotoluene	--	--	Nervous system	--	--	--	--	--
			Ethylbenzene	4.0E-03	mg/kg	Liver and kidney	4.E-07	1.E-05	1.E-07	--	1.E-05
			Fluorene	--	--	Blood-forming system	--	--	--	--	--
			n -Hexane	3.0E-03	mg/kg	Nervous system	5.E-07	3.E-05	1.E-07	--	3.E-05
			p -Isopropyltoluene	--	--	--	--	--	--	--	--
			2-Methylnaphthalene	1.1E+01	mg/kg		5.E-03	3.E-07	1.E-03	9.E-02	1.E-01
			Naphthalene	5.6E+00	mg/kg	Decreased body weight	3.E-03	--	7.E-04	--	4.E-03
			N- nitrosodiphenylamine	2.6E-02	mg/kg	--	--	--	--	--	--
			Phenanthrene	1.1E-01	mg/kg	--	3.E-05	8.E-11	1.E-05	4.E-04	4.E-04
			n -Propylbenzene	--	--	Nervous system	--	--	--	--	--
			Toluene	--	--	Liver and kidney	--	--	--	--	--
			Trichloroethene	--	--	Nervous system	--	--	--	--	--
			1,2,4-Trimethylbenzene	--	--	Blood-forming system	--	--	--	--	--
			1,3,5-Trimethylbenzene	--	--	Blood-forming system	--	--	--	--	--
			2,2,4-Trimethylpentane	1.0E-01	mg/kg	--	2.E-05	1.E-03	4.E-06	--	1.E-03
			Xylenes	6.0E-02	mg/kg	Decreased body weight	3.E-07	9.E-06	8.E-08	--	9.E-06
			TOTAL	--	--		**1.E-01**	**2.E-03**	**5.E-03**	**2.E-01**	**4.E-01**
		PRL S-040 - Soil On-site Direct Contact (0-10 ft bgs)	Copper	2.6E+01	mg/kg	Gastro-intestinal system	7.E-03	5.E-08	2.E-04	1.E-02	2.E-02
			Lead	7.9E+00	mg/kg	--	--	--	--	--	--
			Vanadium	6.0E+01	mg/kg	Liver and kidney	8.E-02	6.E-07	2.E-03	1.E-01	2.E-01
			Zinc	5.6E+01	mg/kg	Blood-forming system	2.E-03	1.E-08	5.E-05	3.E-03	5.E-03
			Acetone	--	--	Kidney	--	--	--	--	--
			Benzene	6.0E-04	mg/kg	Blood-forming system	2.E-06	8.E-04	5.E-07		8.E-04
			Benzo(a)anthracene	2.1E-01	mg/kg	--	7.E-06	5.E-11	3.E-06	2.E-05	3.E-05
			Benzo(g,h,i)perylene	2.1E-02	mg/kg	--	7.E-06	5.E-11	3.E-06	2.E-05	2.E-05
			sec- Butylbenzene	--	--	Kidney	--	--	--	--	--
			2,6-Dinitrotoluene	2.5E-02	mg/kg	Nervous system	2.E-04	2.E-09	6.E-05	4.E-04	7.E-04
			Ethylbenzene	4.0E-03	mg/kg	Liver and kidney	4.E-07	5.E-05	1.E-07	--	5.E-05
			Fluorene	3.9E-02	mg/kg	Blood-forming system	9.E-06	--	4.E-06	--	1.E-05
			n -Hexane	3.0E-03	mg/kg	Nervous system	5.E-07	1.E-04	1.E-07	--	1.E-04
			p -Isopropyltoluene	--	--	--	--	--	--	--	--
			2-Methylnaphthalene	1.6E+00	mg/kg	--	8.E-04	1.E-07	2.E-04	1.E-02	1.E-02
			Naphthalene	2.8E-01	mg/kg	Decreased body weight	1.E-04	--	4.E-05	--	2.E-04
			N- nitrosodiphenylamine	2.3E-02	mg/kg	--		--	--	--	
			Phenanthrene	4.1E-02	mg/kg	--	1.E-05	1.E-10	5.E-06	1.E-04	1.E-04
			n -Propylbenzene	--	--	Nervous system	--	--	--	--	--
			Toluene	--	--	Liver and kidney	--	--	--	--	--
			Trichloroethene	--	--	Nervous system	--	--	--	--	--
			1,2,4-Trimethylbenzene	--	--	Blood-forming system	--	--	--	--	--
			1,3,5-Trimethylbenzene	--	--	Blood-forming system	--	--	--	--	--
			2,2,4-Trimethylpentane	1.0E-01	mg/kg		2.E-05	5.E-03	4.E-06	--	5.E-03
			Xylenes	6.0E-02	mg/kg	Decreased body weight	3.E-07	3.E-05	8.E-08	--	3.E-05
			TOTAL				**9.E-02**	**5.E-03**	**3.E-03**	**2.E-01**	**3.E-01**
Groundwater	Groundwater	PRL S-040 - Groundwater On-site Direct Contact	Copper	--	--	Gastro-intestinal system	--	--	--	--	--
			Lead	--	--	--	--	--	--	--	--
			Vanadium	--	--	Liver and kidney	--	--	--	--	--
			Zinc	--	--	Blood-forming system	--	--	--	--	--
			Acetone	9.4E+00	µg/L	Kidney	6.E-03	3.E-02	2.E-05	--	4.E-02
			Benzene	4.6E-01	µg/L	Blood-forming system	1.E-02	9.E-02	1.E-03	--	1.E-01
			Benzo(a)anthracene	--	--	--	--	--	--	--	--
			Benzo(g,h,i)perylene	--	--	--	--	--	--	--	--
			sec- Butylbenzene	2.7E-01	µg/L	Kidney	2.E-03	9.E-03			1.E-02
			2,6-Dinitrotoluene	--	--	Nervous system	--	--	--	--	--
			Ethylbenzene	1.3E+00	µg/L	Liver and kidney	8.E-04	2.E-03	4.E-04	--	3.E-03
			Fluorene	--	--	Blood-forming system	--	--	--	--	--
			n -Hexane	--	--	Nervous system	--	--	--	--	--
			p -Isopropyltoluene	1.1E-01	µg/L	--	7.E-05	3.E-04	--	--	4.E-04
			2-Methylnaphthalene	--	--	--	--	--	--	--	--
			Naphthalene	1.4E+00	µg/L	Decreased body weight	5.E-03	5.E-01	3.E-03	--	5.E-01
			N- nitrosodiphenylamine	--	--	--	--	--	--	--	--
			Phenanthrene	--	--	--	--	--	--	--	--
			n -Propylbenzene	3.1E-01	µg/L	Nervous system	--	--	--	--	--
			Toluene	2.8E-01	µg/L	Liver and kidney	9.E-05	8.E-04	3.E-05	--	9.E-04
			Trichloroethene	4.6E-01	µg/L	Nervous system	5.E-03	3.E-02	6.E-04	--	3.E-02
			1,2,4-Trimethylbenzene	1.6E+00	µg/L	Blood-forming system	2.E-03	3.E-01	2.E-03	--	3.E-01
			1,3,5-Trimethylbenzene	7.2E-01	µg/L	Blood-forming system	9.E-04	1.E-01	1.E-03	--	1.E-01
			2,2,4-Trimethylpentane	--	--	--	--	--	--	--	--
			Xylenes	6.6E+00	µg/L	Decreased body weight	2.E-04	1.E-03	1.E-04	--	1.E-03
			TOTAL				**3.E-02**	**1.E+00**	**8.E-03**	--	**1.E+00**

Receptor Hazard Index (soil [0-2 ft bgs] + groundwater) = **2.E+00**
Receptor Hazard Index (soil [0-10 ft bgs] + groundwater) = **1.E+00**